

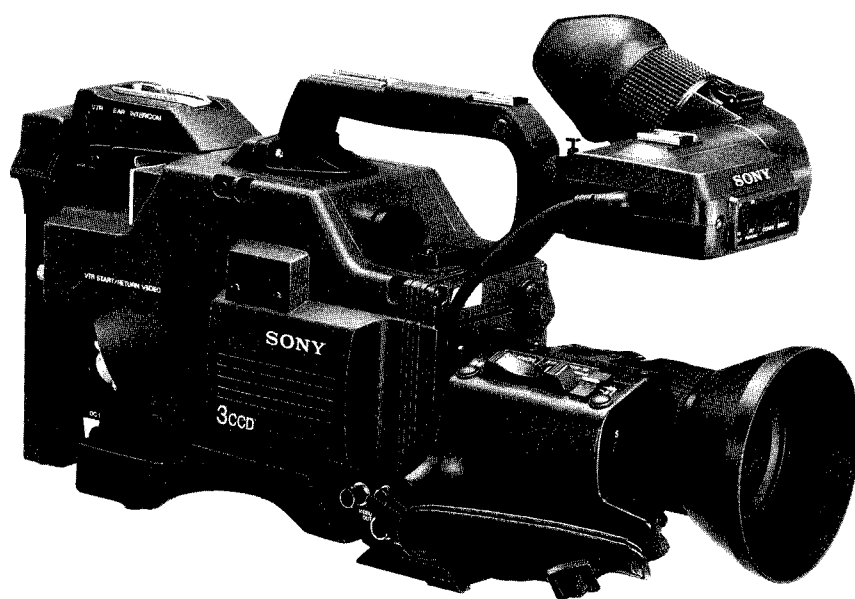
SONY®

Color Video Camera

DXC-327K/327L/327H DXC-327PK/327PL/327PH

Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.



MC-Service

3CCD

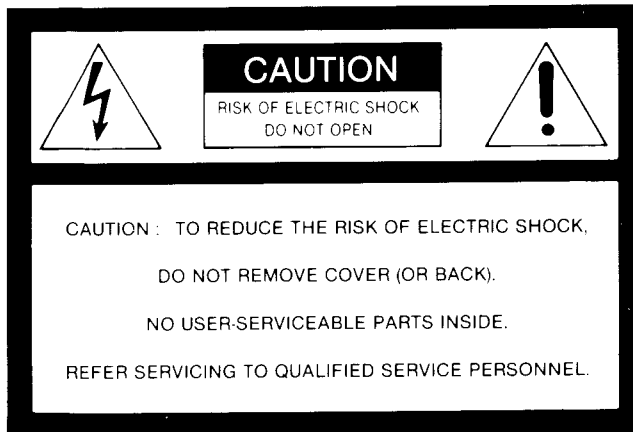
Owner's Record

The model and serial numbers are located on the right side. Record these numbers in the spaces provided below. Refer to them whenever you call your Sony dealer regarding this product.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

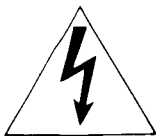


Warning — This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC Rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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Caution

Attaching the zoom lens to the color video camera incorrectly may damage the lens.
Before attaching the lens, carefully read "Attaching the Zoom Lens" on page 19.

Composition of the Color Video Camera

This instruction manual is for both the DXC-327 series (DXC-327K/327L/327H) and the DXC-327P series (DXC-327PK/327PL/327PH) color video cameras. These two types of cameras are designed for different signal systems, the NTSC and the PAL systems. So each type of camera must be used with the equipment which matches its signal system, but the operating procedures for both series are the same. The DXC-327 series is for the NTSC color system, and the DXC-327P series is for the PAL system. The DXC-327K/327PK, the DXC-327L/327PL and the DXC-327H/327PH comprise slightly different components, as noted below. However, the operating procedure for the camera itself is the same.

The camera adaptor is not supplied with any of the cameras.

These operating instructions show you how to use the camera with a CA-327/327P camera adaptor mounted. If you use the camera with a CA-325/325P camera adaptor mounted, refer to the camera adaptor's operating instructions.

When you use a $\frac{2}{3}$ -inch zoom lens, be sure to mount it using the LO-32BMT lens mount adaptor (not supplied). If you use a zoom lens other than the VCL-712BX zoom lens, refer to the lens' instruction manual for information about its operation.

DXC-327K/327PK

DXC-327L/327PL

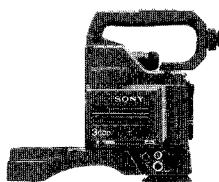


VCT-12 tripod attachment



DXF-501/501CE viewfinder

DXC-327H/327PH



DXC-327/327P camera head

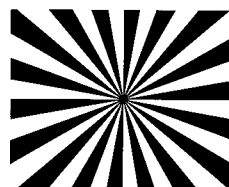


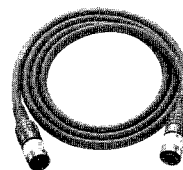
Chart for flange focal length adjustment



VCL-712BX zoom lens



LC-420 carrying case



CCQ-2BRS camera cable

Model	DXC-327K/ 327PK	DXC-327L/ 327PL	DXC-327H/ 327PH
Composition			
DXC-327/327P camera head	Yes	Yes	Yes
VCL-712BX zoom lens		No	No
DXF-501/501CE viewfinder		Yes	
LC-420 carrying case			
CCQ-2BRS camera cable			
VCT-12 tripod attachment			
Chart for flange focal length adjustment			Yes

DXC-327/327P Color Video Camera Overview

The DXC-327/327P is a newly designed portable color video camera employing three $\frac{1}{2}$ -inch CCD (Charge Coupled Device) imagers each having a total of about 380,000 (NTSC) or 440,000 (PAL) effective picture elements. This camera can be used as a stand alone camera unit when the camera adaptor (not supplied) is mounted and as a camera unit used with various kinds of equipment, such as an EVV-9000/9000P Hi8 format portable video cassette recorder.

The DXC-327/327P has the following features.

Why CCD?

- The CCD gives high resolution and high sensitivity.
- A compact and lightweight camera body with the CCD has lower power consumption than a camera with pickup tubes.
- The CCD gives low lag, high resistance to image burning and no deflection distortion.
- The CCD is not affected by vibration and mechanical shock.
- The CCD imager is not influenced by terrestrial magnetism.
- Thanks to the high signal-to-noise ratio, the video output level can be raised by 9 dB or 18 dB to obtain a clear picture under low light conditions.

Various equipment to be connected

- This camera can be used with various camera adaptors, such as the CA-327/327P and CA-325/325P.
- This camera outputs an RGB format signal with an optional adaptor for RGB output attached to it.
- The optional lens mount adaptor enables the attachment of the $\frac{2}{3}$ -inch zoom lens. Be sure to use the LO-32BMT lens mount adaptor for the $\frac{2}{3}$ -inch zoom lens.
- You can attach a Hi8 format video cassette recorder directly to this camera, making it a camcorder suitable for one-person operation.
- An optional camera control unit enables remote control of the camera.
- An S-VHS format VTR can be connected to this camera.
- This camera can be used as a studio camera when connected to a CCU-M3/M3P camera control unit.

Power sources

The following four power sources can supply power to the DXC-327/327P.

- Battery pack built into the CA series camera adaptor
- VTR
- Camera control unit
- AC power source when using the optional CMA series camera adaptor

Electronic shutter

The electronic shutter provides clear images even when objects moving at very high speed is played back in slow motion or freeze frame.

Detail function

The detail function increases or decreases the sharpness of the picture.

Automatic adjustment and memory function

- The white balance and black balance are automatically adjusted by a chip, and the adjusted values are kept in the memory of the camera.
- Black level drift is automatically adjusted, together with the black balance.
- If the entire picture is too bright, the black level is lowered to the appropriate level by the automatic black level (ABL) adjustment so that a picture with good contrast can be obtained.

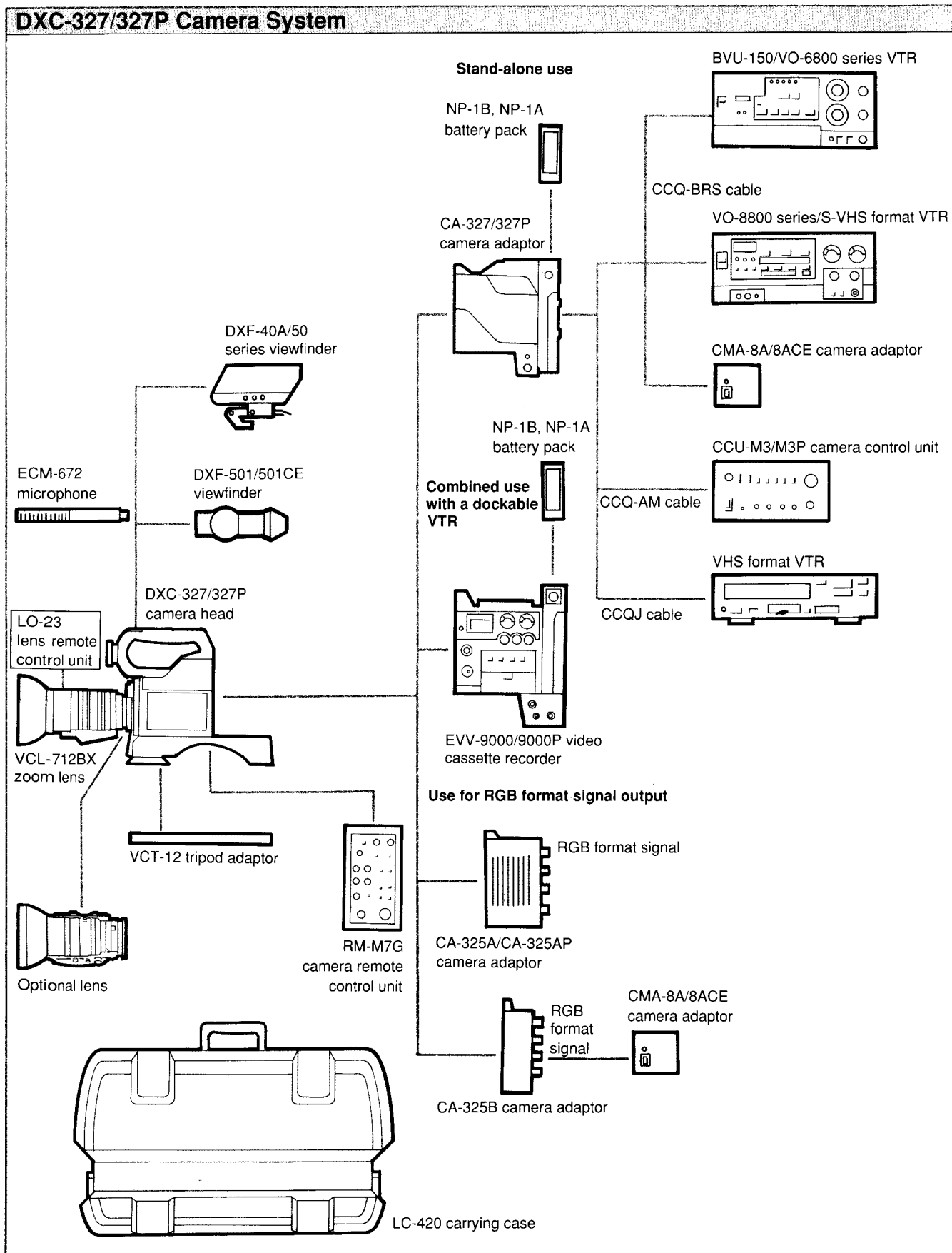
Display on the viewfinder

The viewfinder shows the following four displays:

- Characters:
Show the setting of the switches, the warning indications, and the title characters to be inserted.
- Zebra pattern:
Appears on the portion where the video output level is about 70 to 80 IRE (for NTSC model) or 490 to 560 mV (for PAL model). This pattern provides a useful reference when you manually adjust the iris.
- Safety zone marker and center marker:
Indicate the safety zone for shooting and the center of the picture.
- REC indicator:
Blinks if the connected VTR malfunctions.

These operating instructions show the operations when you use the CA-327/327P camera adaptor. When using the CA-325/325P camera adaptor, refer to the CA-325/325P camera adaptor operating instructions.

DXC-327/327P Color Video Camera Overview



Notes on Use

Precautions

Safety

- Do not try to mount a $\frac{2}{3}$ -inch lens directly on the DXC-327/327P.
Be sure to attach an LO-32BMT lens mount adaptor (optional) to your $\frac{2}{3}$ -inch lens if you want to mount it.
- Be sure to read "Attaching the Zoom Lens" (page 19) before attempting to attach the zoom lens. Attaching the lens incorrectly may cause damage.
- Operate the camera only on 12 V DC. For operation from an AC power line, use the camera adaptor recommended for this camera.
- Allow adequate air circulation to prevent internal heat build-up.

Operation

- Avoid rough handling or mechanical shock.
- Do not operate the camera outside -5°C to $+45^{\circ}\text{C}$ (23°F to 113°F).
- Keep the camera horizontal.
- Keep the camera away from very strong magnetic fields to avoid distortion and flutter on the screen.
- Do not hold the camera by the viewfinder.
- Always cover the lens with the supplied lens cap when the video camera will not be used for a long time.

Operation of the viewfinder

- Do not point the viewfinder directly at the sun.
- The picture on the viewfinder screen may be distorted if it is used in strong magnetic fields.

Cleaning

Clean the cabinet, panel, and controls with a dry soft cloth, or soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzene, which might damage the finish.

Repacking

Do not discard the carton. It affords maximum protection whenever the camera is transported. Do not transport or ship the camera only in the carrying case. Repack it as it was originally packed at the factory.

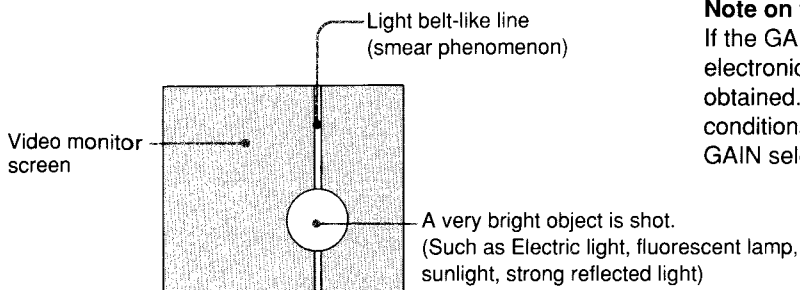
If you have any questions about this camera, contact your authorized Sony dealer.

Special Characteristics of a CCD

The following phenomena may appear on the monitor screen while the DXC-327 series color camera is used. These phenomena do not mean there is anything wrong with the camera.

Smear phenomenon

This may appear when a very bright object is shot.



White dots

White dots may appear in the video output if the camera is used at very high temperatures.

Wavy pictures

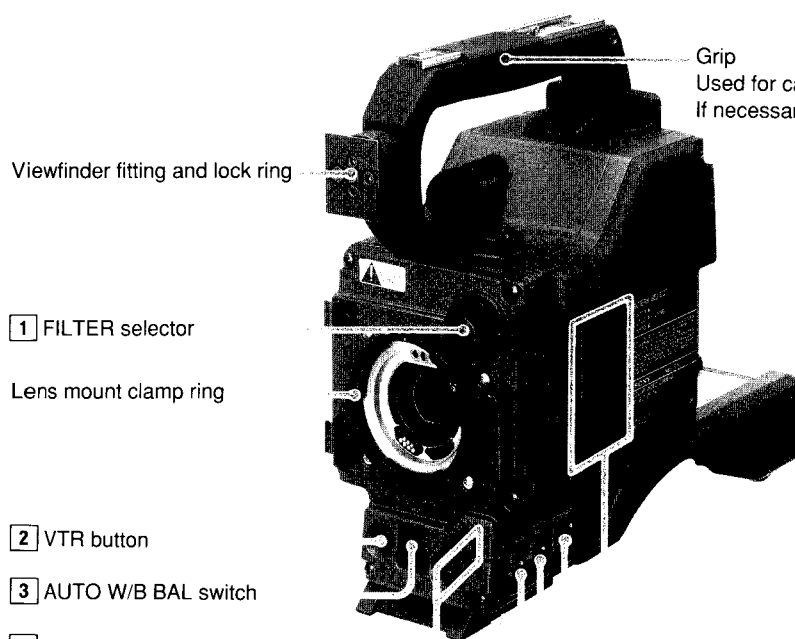
This may appear when fine stripes, straight lines, and so on, are shot. Their images monitored on the screen look wavy.

Note on the electronic shutter

If the GAIN selector is set to the 18 dB position when the electronic shutter is used, a clear picture may not be obtained. Use the electronic shutter under the lighting conditions under which a clear picture is obtained with the GAIN selector set to the 0 or 9 dB position.

Location and Function of Parts

DXC-327/327P Camera Head



Grip

Used for carrying the video camera.

If necessary, the grip can be detached from the video camera.

Viewfinder fitting and lock ring

1 FILTER selector

Lens mount clamp ring

2 VTR button

3 AUTO W/B BAL switch

4 UP/ON button and DOWN/OFF button

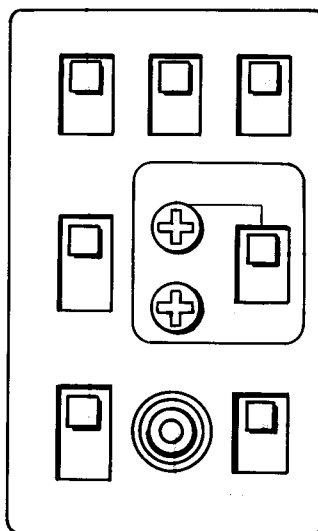
Screw hole for tripod (U¹/₄" -20 UNC)

Screw hole for tripod (U³/₈" -16 UNC)

5 GAIN selector

6 WHITE BAL selector

7 POWER switch



8 SHUTTER switch

9 ABL switch

10 ZEBRA switch

11 VF MARKER selector

12 SC PHASE control

13 SC PHASE selector

14 H PHASE control

15 DISP CHG switch

16 BARS switch

17 REC REVIEW button

1 FILTER selector

Selects the appropriate filter as shown below.

Filter number	Color temperature	Lighting conditions
1	3200K	Iodine lamp, sunrise or sunset
2	5600K + 1/8 ND*	Bright outdoor
3	5600K	Cloudy or rainy

* ND: Neutral density filter

2 VTR button

When connecting the camera to a portable VTR:

Press this button to start recording and press it again to stop recording.

When connecting the camera to a CCU-M3/M3P:

Keep this button pressed to monitor the return video pictures on the viewfinder. Release it to monitor the camera pictures.

3 AUTO W/B BAL (automatic white/black balance adjustment) switch

When you select "A" or "B" with the WHITE BAL selector, automatic adjustment of the white balance is possible simply by pushing this switch to WHT. Automatic adjustment of the black balance is possible simply by pressing this switch to BLK, irrespective of the WHITE BAL selector setting. The adjusted value will be automatically stored in memory. When you release this switch, it returns to the center position automatically. (See pages 39 and 40.)

WHT: For the automatic white balance adjustment.

BLK: For the automatic black balance and black set level adjustment.

4 UP/ON button and DOWN/OFF button

Use with the DISP CHG switch **15** to set the following six settings:

- (1) Sets the title characters. (See page 48.)
- (2) Turns on/off the LOW LIGHT indication. (See page 50.)
- (3) Adjusts the reference level of automatic iris. (See page 37.)
- (4) Adjusts the detail level. (See page 46.)
- (5) Adjusts the master pedestal level. (See page 42.)
- (6) Selects the shutter speed. (See page 42.)

5 GAIN selector

When the pictures are dark even though the iris is open, raise the video output level with this selector.

0 dB: Normal setting.

9 dB: Raises the video output level by 9 dB.

18 dB: Raises the video output level by 18 dB.

6 WHITE BAL (white balance memory) selector

A or B: Select A or B. The white balance setting stored with the AUTO W/B BAL switch will be used.

PRE: Provides a factory-preset white balance value for color temperature of 3200 K for the selected FILTER selector position. Set to PRE when there is no time for white balance adjustment.

7 POWER switch

ON: Turns the camera on.

OFF: Turns the camera off.

8 SHUTTER (electronic shutter) switch

ON: Activates the electronic shutter. To select the shutter speed, use the DISP CHG button and the UP/ON or DOWN/OFF button. (See page 42.)

OFF: Normally set to this position.

9 ABL (automatic black level) switch

When the entire picture is too bright, such as during outdoor shooting, set this switch to ON. A well-contrasted picture will be obtained.

10 ZEBRA switch

Set this switch to ON to display the zebra pattern on the viewfinder screen for the manual iris adjustment. The zebra pattern appears in the picture where the video level is about 70 to 80 IRE (for NTSC) or about 490 to 560 mV (for PAL). (See page 46.)

11 VF MARKER (viewfinder safety zone marker and/or center marker) selector

Use this selector to display the safety zone marker and/or center marker on the viewfinder screen.

OFF: Indicates neither of the markers.

1: Indicates the safety zone marker.

2: Indicates both of the markers.

12 SC (subcarrier*) PHASE control

Use this control to adjust the SC phase finely with a small screwdriver after roughly adjusting it with the SC PHASE selector **13** when using two or more cameras simultaneously. (See page 47.)

13 SC (subcarrier) PHASE selector

Switch this selector to 0° or 180° to adjust the SC phase difference between the gen-lock input and the video output signals roughly when using two or more cameras simultaneously. (See page 47.)

14 H (horizontal) PHASE control

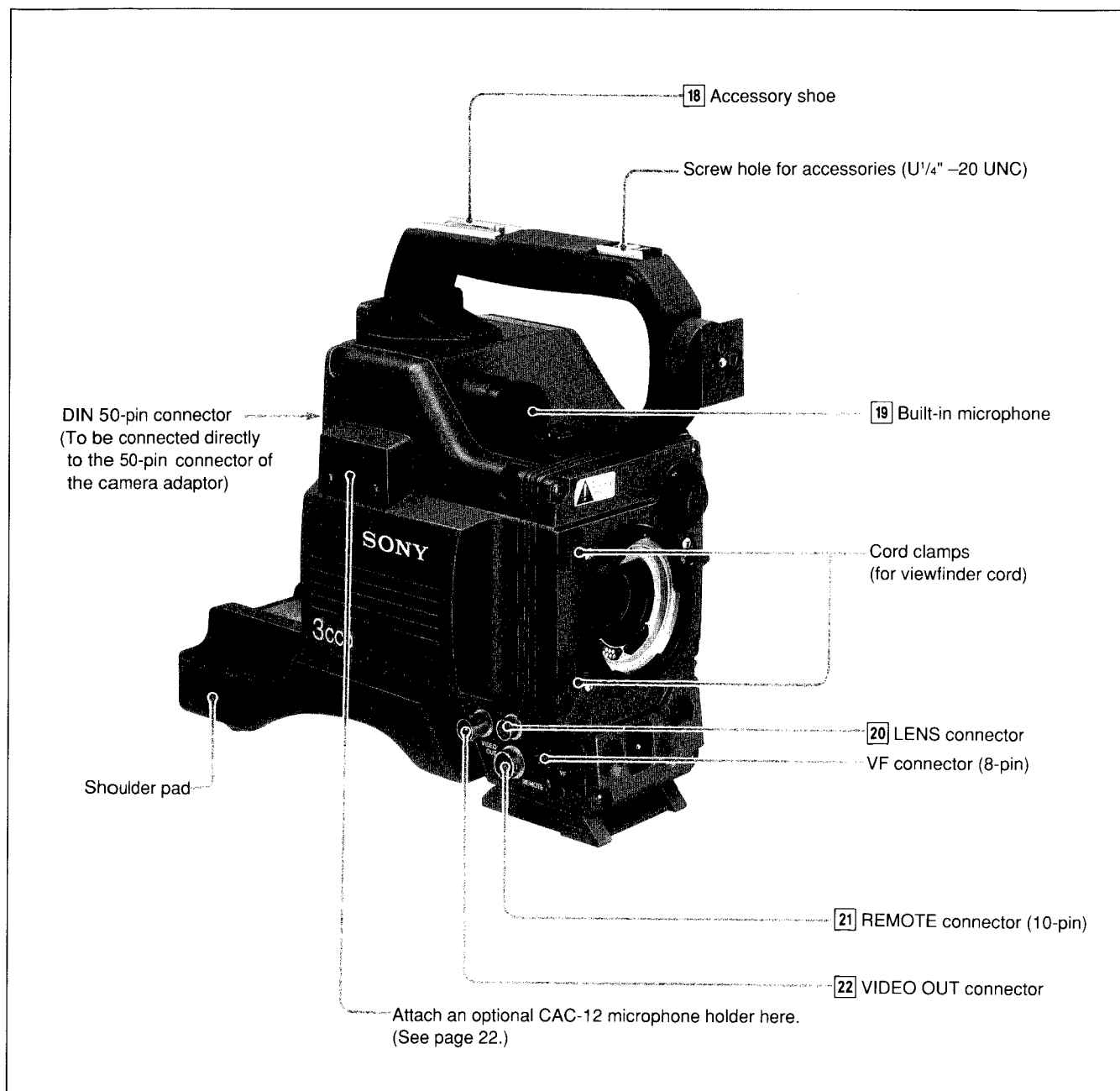
Turn the control using a small screwdriver to adjust the H phase difference between the gen-lock input and video output signals. (See page 47.)

* Subcarrier

Color information which is contained in a composite video signal. Its amplitude is for color saturation (chromaticity) and its phase to color burst is for hue (color).

Location and Function of Parts

- 15 DISP CHG (display change) switch**
Pressing this switch changes the character display mode of the viewfinder screen. (See page 51.)
- 16 BARS (color bar generation) switch**
Set this switch to ON to display the color bars on the viewfinder or video monitor screen when adjusting its contrast and brightness. The color bars are output to the viewfinder, video monitor, or other connected equipment from the following connectors. (See page 36.)
- VIDEO OUT connector
 - VF connector
 - REMOTE connector
 - VTR/CCU/CMA connector (on the camera adaptor)
- Set the switch to OFF during normal operation.
- 17 REC (record) REVIEW button**
When using the EVV-9000/9000P Hi8 format video cassette recorder with this camera, use this button to check the recorded picture during recording. Keeping the button pressed reviews some of the recorded picture. For details, refer to the EVV-9000/9000P operating instructions.



18 Accessory shoe

An optional DXF-40A/40ACE or DXF-50/50CE viewfinder can be attached here. For viewfinder attachment, refer to the viewfinder's instruction manual.

19 Built-in microphone

When the camera cable is connected to a portable VTR, the built-in microphone is automatically connected, so a sound recording can be made simultaneously with the video recording.

When an external microphone is connected to the MIC IN connector on the CA-327/327P camera adaptor attached to the camera, the built-in microphone does not function.

20 LENS connector (6-pin)

To use a ²/₃-inch zoom lens with the LO-32BMT lens mount adaptor, connect the lens connector here.

21 REMOTE connector (10-pin)

To control this camera from an RM-M7G camera remote control unit, connect to the RM-M7G camera remote control unit. In this case, make sure that the CAMERA SELECT switch on the bottom of the RM-M7G is set at "1" (factory preset position).

22 VIDEO OUT (output) connector (BNC connector)

Connect to the video input of the VTR or video monitor. Title characters displayed on the viewfinder screen are also output from this connector.

Location and Function of Parts

CA-327/327P Camera Adaptor (Not Supplied)

The camera adaptor is not supplied with this camera. We recommend a Sony CA-327/327P or CA-325/325P camera adaptor.

This section shows the location and function of parts of the CA-327/327P camera adaptor.

Please refer to the CA-325/325P operating instructions when using the CA-325/325P.

VTR selector

Selects the VTR depending on the type of the connected VTR. (See page 27.)

Caution

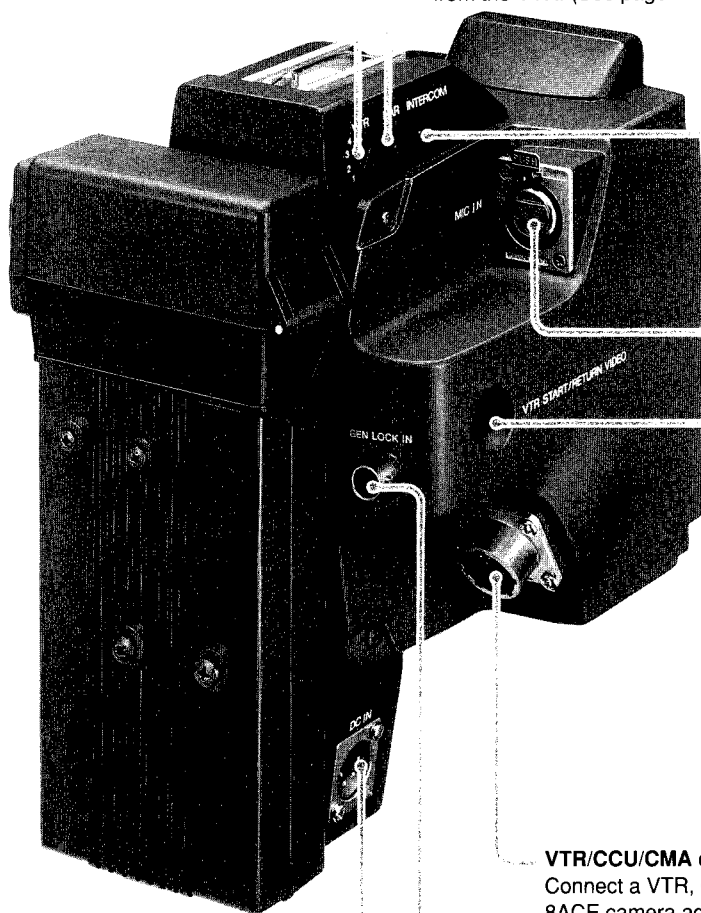
Be sure to set the VTR selector to the correct position for the VTR used. If it is not, the VTR might not operate properly.

EAR (earphone) jack (mini jack)

Connect an earphone to monitor the playback or recording sound from the VTR.

Note

With some types of VTR, you may not be able to monitor the sound from the VTR. (See page 27.)



INTERCOM jack (mini intercom jack)

Connect a DR-100 intercom headset here. DR-100 enables the communication between the camera and the connected CCU-M3/M3P camera control unit or video switcher.

MIC IN (microphone input) connector (XLR 3-pin)

You can connect a microphone here.

VTR START/RETURN VIDEO button

When a VTR or CCU-M3/M3P camera control unit is connected to the VTR/CCU/CMA connector, this button functions. When the VTR is connected: Starts and stops the recording. Press the button to start recording, and press again to stop.

When the CCU-M3/M3P camera control unit is connected:

Monitors the return video picture. Keep the button pressed to monitor the picture, and release it to monitor the camera picture.

VTR/CCU/CMA connector (14-pin)

Connect a VTR, CCU-M3/M3P camera control unit or CMA-8A/8ACE camera adaptor.

DC IN (input) connector (XLR 4-pin)

This connector is equipped for supplying power from an external DC power supply (12 VDC).

GEN LOCK IN (gen-lock input) connector (BNC connector)

Connect the gen-lock sync signal (VBS or BS) for synchronization here.

DIN connector (50-pin)

Connect to the 50-pin connector on the camera head.

AUDIO (monaural audio output) connector (Phono jack)

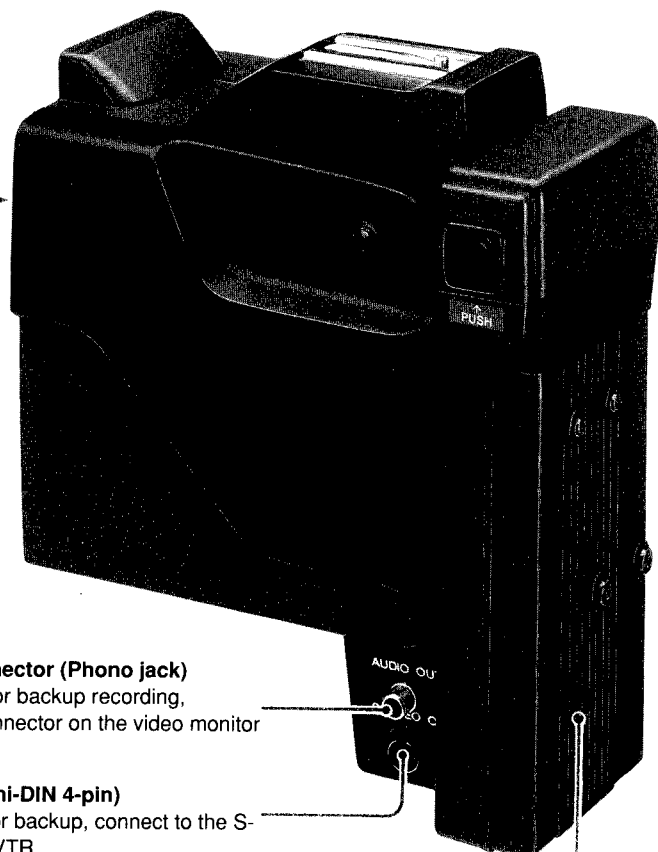
When using a video monitor or a VTR for backup recording, connect to the monaural audio input connector on the video monitor or VTR.

S VIDEO OUT (output) connector (mini-DIN 4-pin)

When using a video monitor or a VTR for backup, connect to the S-type connector on the video monitor or VTR.

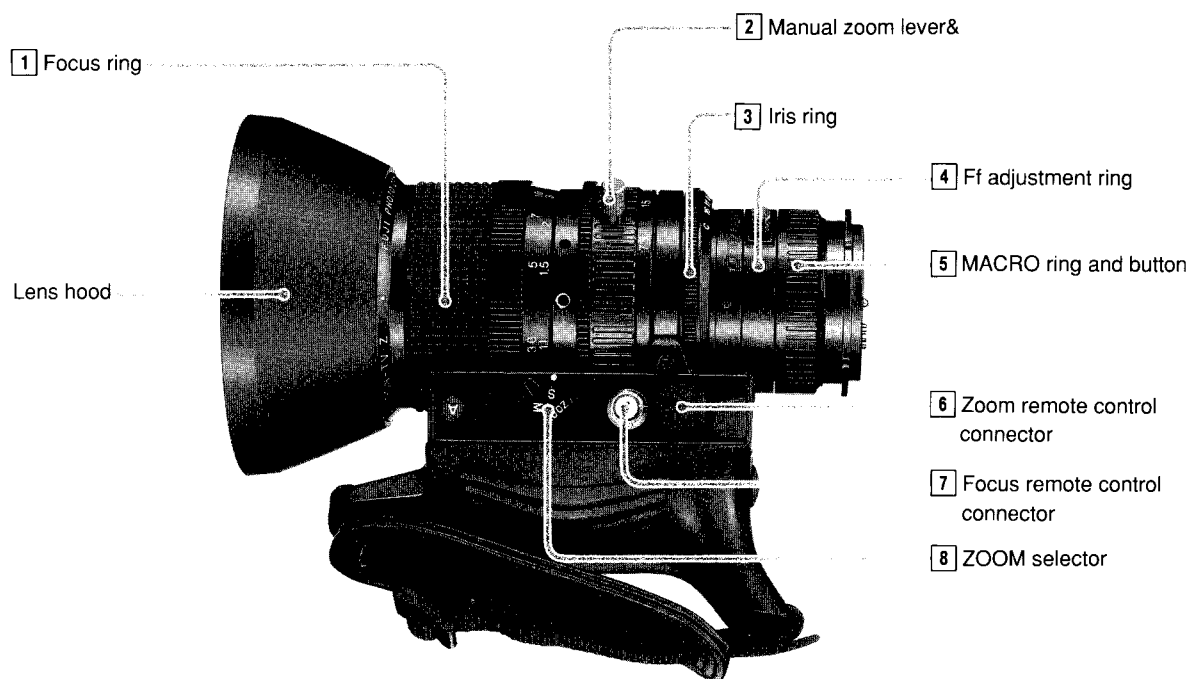
Battery pack compartment

When using the power source from the battery pack, put an NP-1B or NP-1A battery pack into this compartment. (See page 29.)



Location and Function of Parts

VCL-712BX Zoom Lens



1 Focus ring

Turn this ring for focusing.

2 Manual zoom lever

For manual zooming, turn this lever with the ZOOM selector **8** set to M.

3 Iris ring

For manual iris adjustment, turn this ring with the iris selector **9** set to M.

4 Ff (flange focal length) adjustment ring

For Ff adjustment, release the screw and turn the ring.

5 MACRO (close-up) ring and button

Used for close-ups. (See page 45).

6 Zoom remote control connector (8-pin)

Connect an LO-23 lens remote control unit (optional) for remote control of zooming when the camera is attached to a tripod.

7 Focus remote control connector (3-pin)

Not used.

8 ZOOM selector

S (servo): For motorized zooming.

M (manual): For manual zooming.

9 Iris selector

A (automatic): For automatic iris adjustment.

M (manual): For manual iris adjustment.

10 Instant automatic iris adjustment button

The iris is automatically adjusted while this button is kept depressed, when the iris selector **9** is set to M. When the button is released, the iris will be fixed at the value that has just been obtained until the iris is adjusted again manually.

11 Motorized zoom switch

Press either end of this switch for motorized zooming with the ZOOM selector set to S: W for a wide-angle picture and T for a telephoto picture. Zooming is faster when the switch is pressed down all the way and slower when the switch is pressed down only slightly.

12 RET (return video¹⁾) button

When a portable VTR is connected, keep this button pressed to monitor the E-E picture ²⁾. Release the button to monitor the camera picture.

When a CCU-M3/M3P camera control unit is connected, keep this button pressed to monitor the return video picture. Release the button to monitor the camera picture.

13 VTR button

When a portable VTR is connected to the camera, press this button to start, and press again to stop recording.

This button has the same function as the VTR button of the camera (start switch).

1) Return video

The picture from a VTR during recording, the playback picture during playback, or the signal from a control console such as a video switcher.

2) E-E picture

The video signal input to the VTR passes through the VTR amplifier and is output through the video output connector without being recorded onto the tape.

Location and Function of Parts

DXF-501/501CE Electronic Viewfinder



1 REC/TALLY indicator (red)*

Lit during recording with one camera, and lit when the camera's picture is selected by a control console, a video switcher, or other means, connected to the CCU-M3/M3P camera control unit which is connected to the camera.

The indicator blinks in accordance with the warning system of the VTR.

2 BATT (battery) indicator (red)*

Starts blinking several minutes before the battery of the VTR, the CCU-M3/M3P camera control unit or the camera adaptor is discharged to a level at which it cannot power the VTR or the camera control unit (about 11 V), and illuminates steadily when the battery has discharged to that level. When this indicator is lit, replace the battery. (For details, see the table on page 50.)

3 GAIN UP indicator (orange)

Lights up when the GAIN selector is set to 9 dB or 18 dB.

4 SHUTTER indicator (red)

This indicator lights up when the SHUTTER switch on the video camera head is set to ON.

5 Diopter adjustment ring

Adjusts the diopter.

(For details about adjustment procedures, see page 36.)

6 Tally lamp (red)

When the TALLY switch **7** is set to ON, this lamp operates the same as the REC/TALLY indicator **1**.

7 TALLY switch

The tally lamp **6** can be activated or deactivated if necessary, by setting this switch to ON or OFF.

8 PEAKING switch

Increases the sharpness in the picture on the viewfinder for easy focusing by setting this switch to ON.

Note

This switch does not affect the output signal of the camera.

9 CONTR (contrast) control

Adjusts the contrast of the picture on the viewfinder screen.

Note

This control does not affect the output signal of the camera.

10 BRIGHT (brightness) control

Adjusts the brightness of the picture on the viewfinder screen. To obtain a brighter picture, turn this control clockwise.

Note

This control does not affect the output signal of the camera.

* With some types of VTR, the indicator may not light or blink. (See page 27.)

Accessory Attachment

Attaching/Detaching a Camera Adaptor

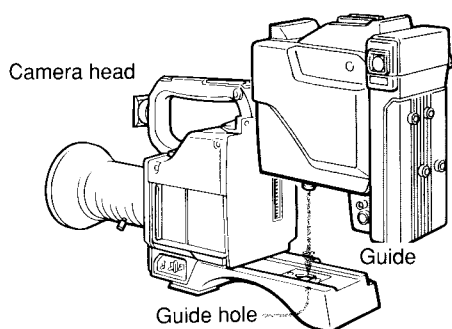
The camera adaptor is not supplied with this camera. As a camera adaptor, we recommend a Sony CA-327/327P or CA-325/325P camera adaptor.

This section tells you how to attach the CA-327/327P to the camera and how to take it off again.

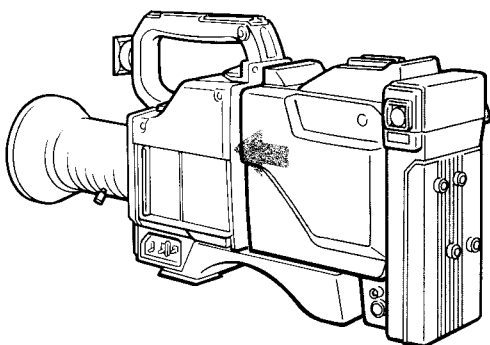
Refer to the CA-325/325P operating instructions when using the CA-325/325P.

Attaching the camera adaptor (not supplied)

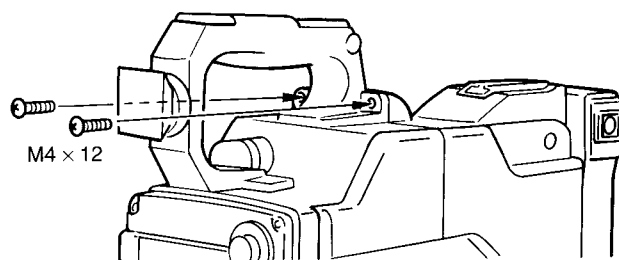
- 1** Put the camera adaptor on the camera head with the guide in the guide hole.



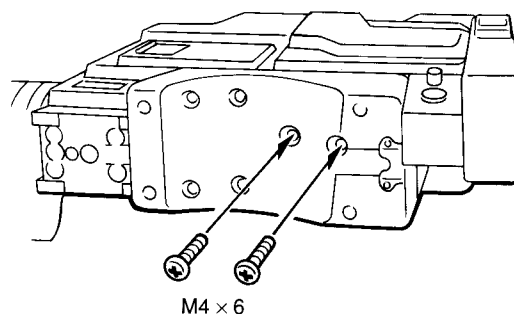
- 2** Push the camera adaptor forward along the groove until its 50-pin connector locks into the DIN 50-pin connector on the camera.



- 3** Fix the camera adaptor with the two screws at the connecting part.



- 4** Tighten the two screws at the bottom of the shoulder pad.



Detaching the camera adaptor

To detach the camera adaptor, reverse the order of the above instructions.

Attaching/Detaching a Hi8 Format Video Cassette Recorder

When using an EVV-9000/9000P Hi8 format video cassette recorder with this camera, the attaching and detaching procedure of the EVV-9000/9000P is the same as that of the CA-327/327P camera adaptor.

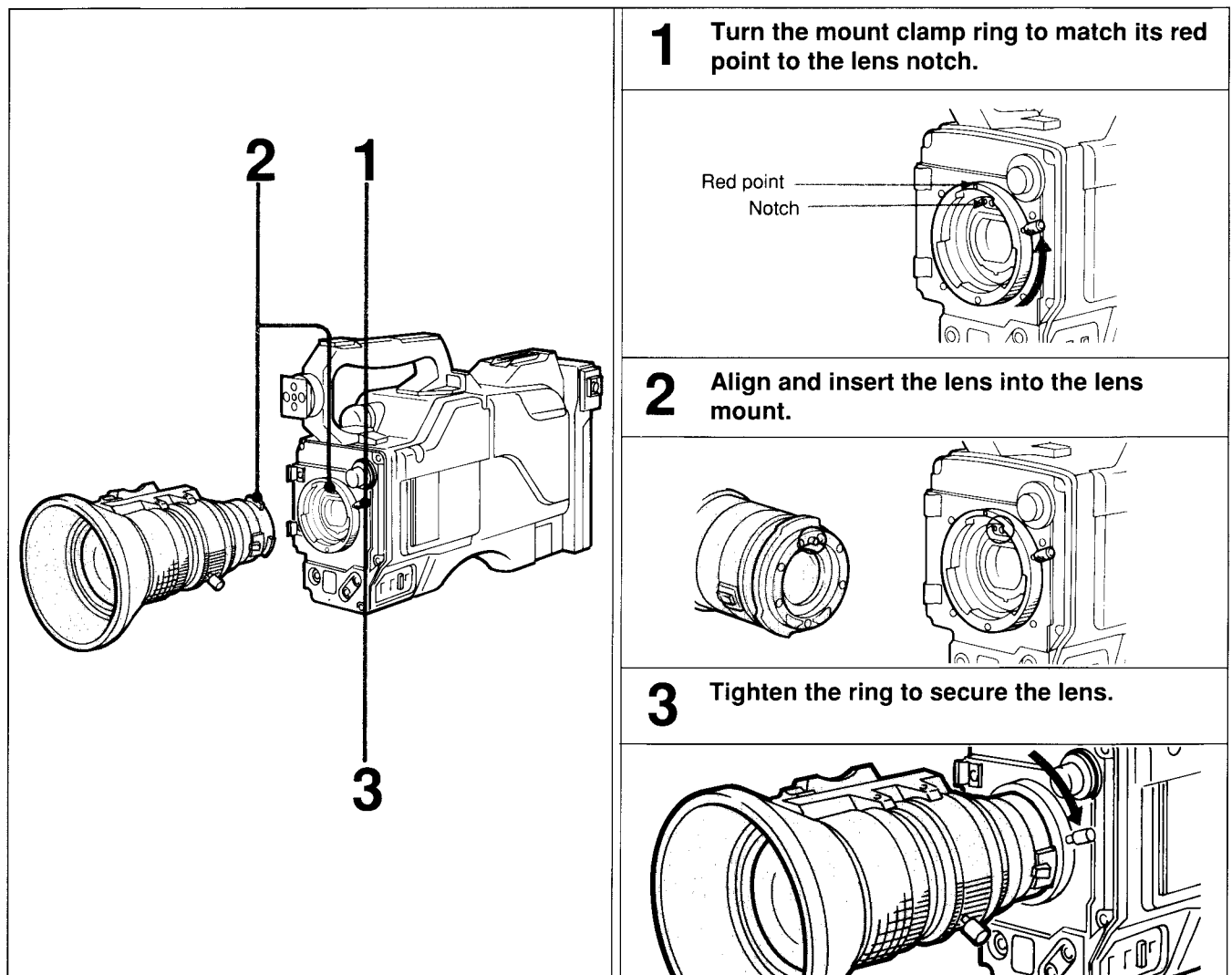
For details, refer to the EVV-9000/9000P operating instructions.

Attaching the Zoom Lens

Caution

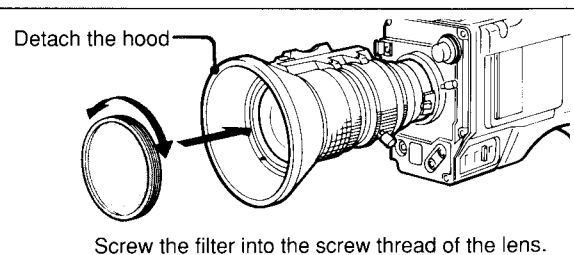
Check that the lens you are going to mount is a $\frac{1}{2}$ -inch lens. A $\frac{2}{3}$ -inch lens cannot be directly attached to the lens mount of the video camera. Do not try to mount a $\frac{2}{3}$ -inch lens directly to the video camera's lens mount as doing so will damage the optical block of the video camera.

A $\frac{2}{3}$ -inch lens can only be mounted with an LO-32BMT lens mount adaptor (optional). Refer to the instructions supplied with the LO-32BMT for how to use the LO-32BMT. Before attaching the lens, remove the protective caps from the mounts of the camera and the lens.

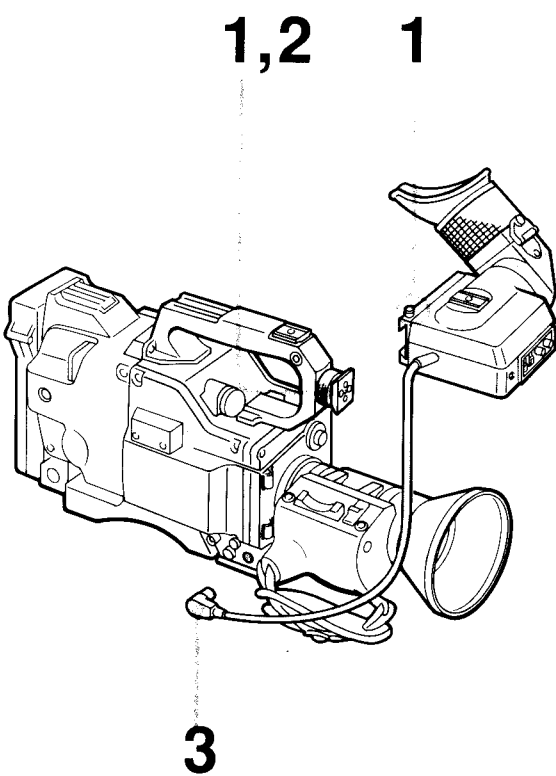


How to attach an optional filter to the lens

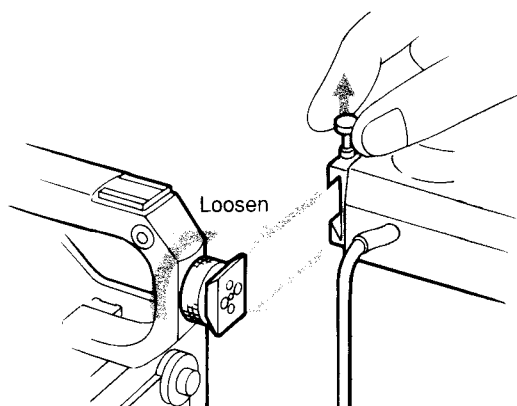
Detach the lens hood, then screw the filter on clockwise to attach.



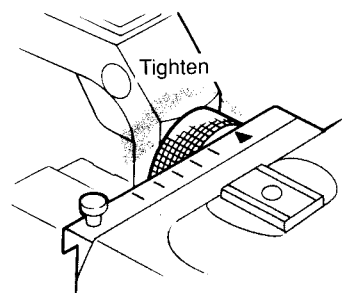
Attaching the Electronic Viewfinder



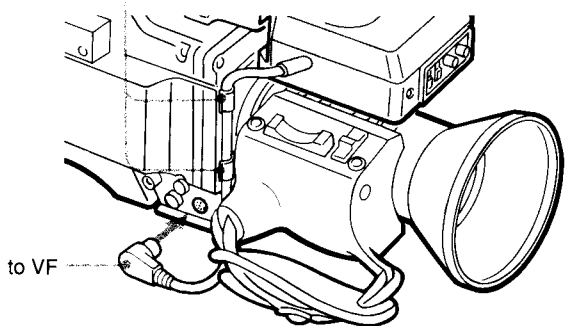
- 1** Loosen the lock ring, and align and slide the viewfinder into the mount, while pulling the pin up.



To detach the viewfinder, loosen the lock ring, and slide the viewfinder while pulling the pin up.
- 2** Tighten the lock ring.

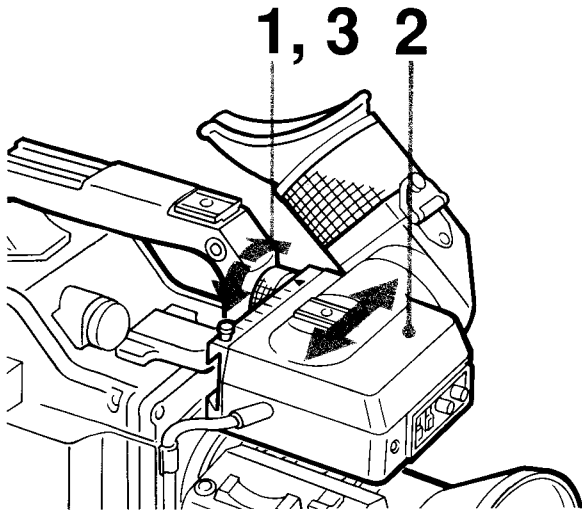

- 3** Connect the viewfinder connector to the VF connector on the camera.

Clamp the cord.



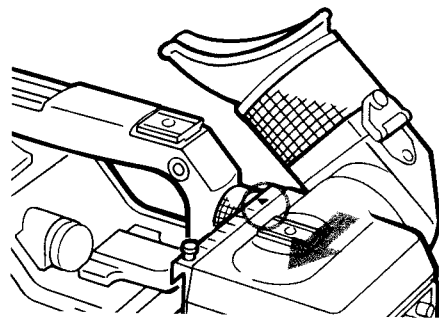
For easy operation of the viewfinder

Sliding the viewfinder from side to side:

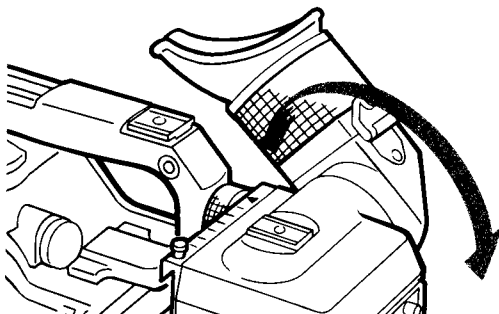


- 1** Loosen the lock ring.
- 2** Slide the viewfinder to the desired position.
- 3** Tighten the ring.

To insert the camera into the carrying case with the viewfinder attached to it, slide the viewfinder to the "▼" mark and tighten the lock ring.



Tilting the eye cup:



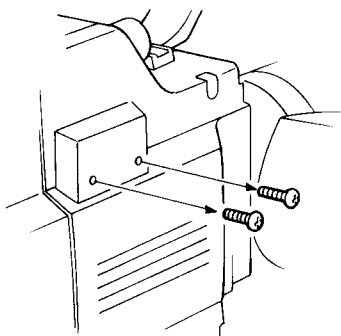
Tilt the eye cup up or down until it is comfortable to look through it.

Accessory Attachment

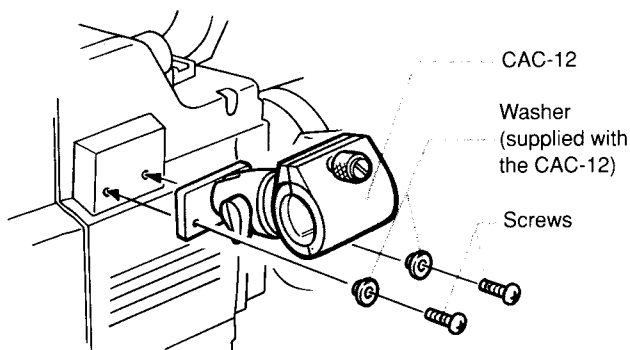
Attaching a Microphone

In order to use an ECM-672 external microphone (not supplied), first attach a CAC-12 microphone holder (not supplied) to the camera head.

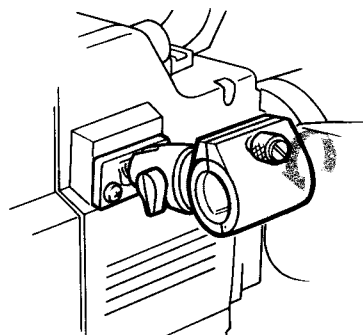
- 1** Remove the two screws from the side of the camera head.



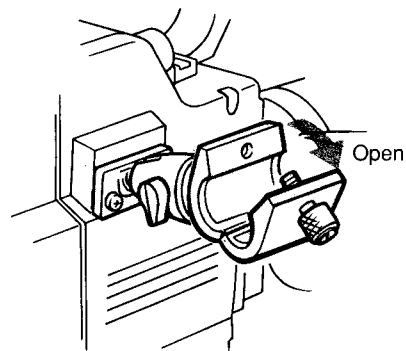
- 2** Attach the CAC-12 using the screws removed from the camera in step 1.



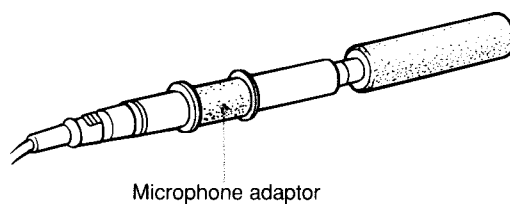
- 3** Loosen the screw of the microphone holder.



- 4** Open the microphone holder.

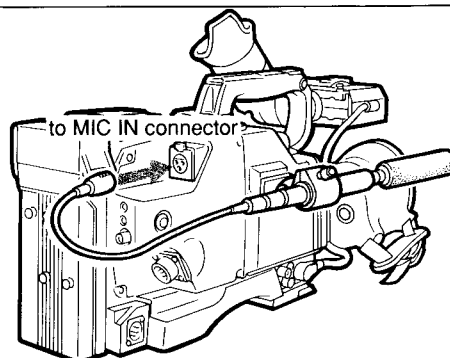


- 5** Attach a microphone adaptor to the microphone when a thin microphone is used.



When the ECM-672 is used, the microphone adaptor is not necessary.

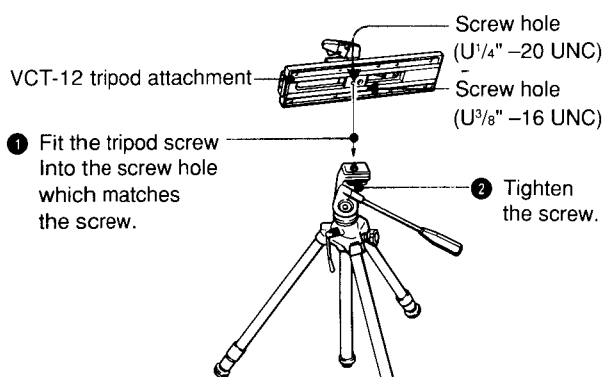
- 6** Insert the microphone to the microphone holder, and tighten the screw.



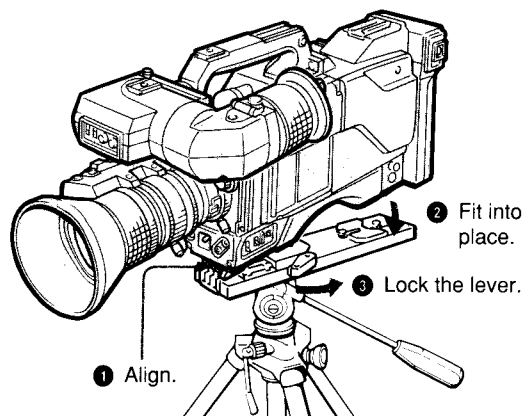
Attaching a Tripod

Although the camera can be mounted on a tripod directly, use a VCT-12 tripod attachment when mounting with a large viewfinder attached to the camera.

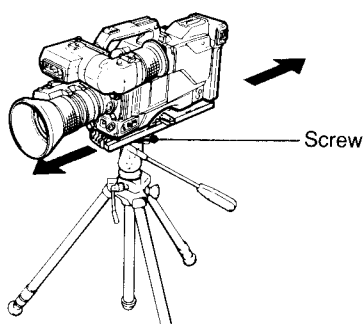
1 Attach the tripod attachment to the tripod.



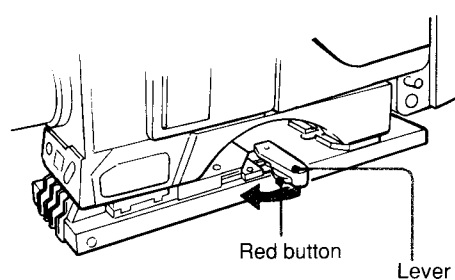
2 Attach the camera.



3 Slightly loosen the tripod screw, and move the camera to be balanced. Tighten the screw.



Camera detachment

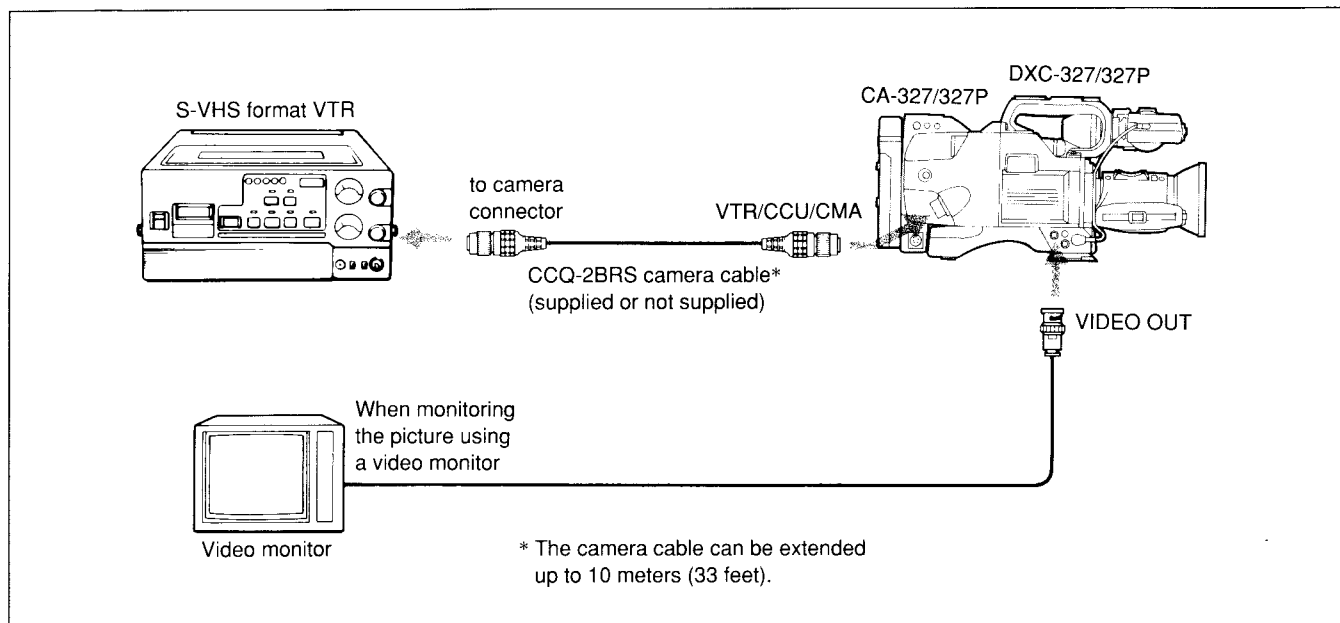


While depressing the red button, slide the lever to the left to release the lock. Remove the camera.

Connections

Before making connections, make sure that the power switches of the camera and other equipment are turned off.

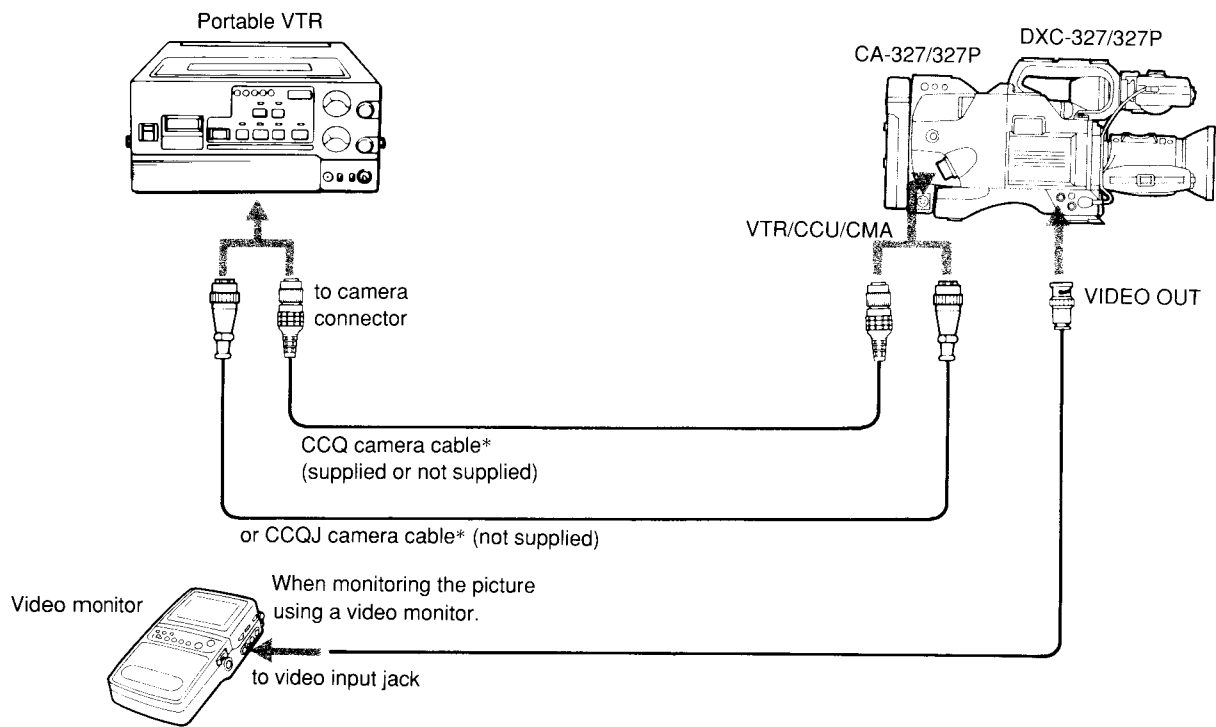
Connecting an S-VHS Format Portable VTR



Notes

- Picture monitoring of the Y/C separate signal is possible if the monitor is equipped with S-type video input jacks. Connect the S-type video output jacks of the VTR to the S-type video input jacks of the monitor. In this case, connection between the VIDEO OUT connector of the camera and the monitor is unnecessary.
- When using a VTR which records with a composite video signal next time, change the setting of the OUTPUT selector to VBS.
- Set the OUTPUT selector on the camera adaptor to Y/C when connecting an S-VHS format portable VTR to the CA-325 camera adaptor. The video signal output to CCQ camera cable is now the Y/C separate signal.

Connecting a Portable VTR

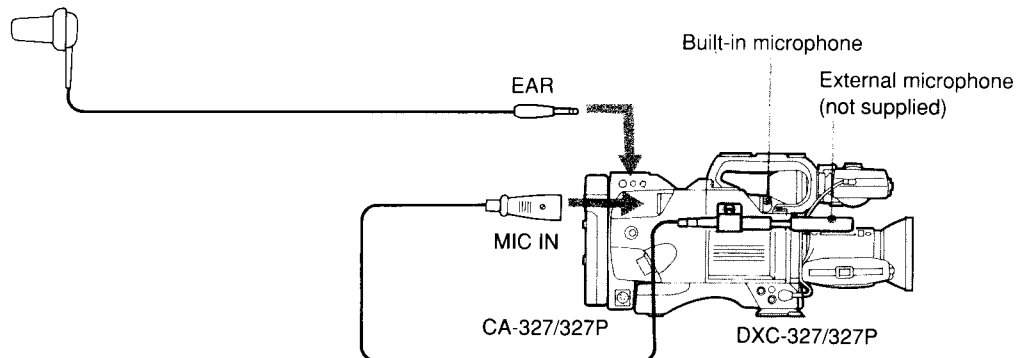


* The camera cable can be extended up to 10 meters (33 feet) using a CCQ camera cable. Consult your authorized Sony dealer.

Connection for simultaneous sound recording

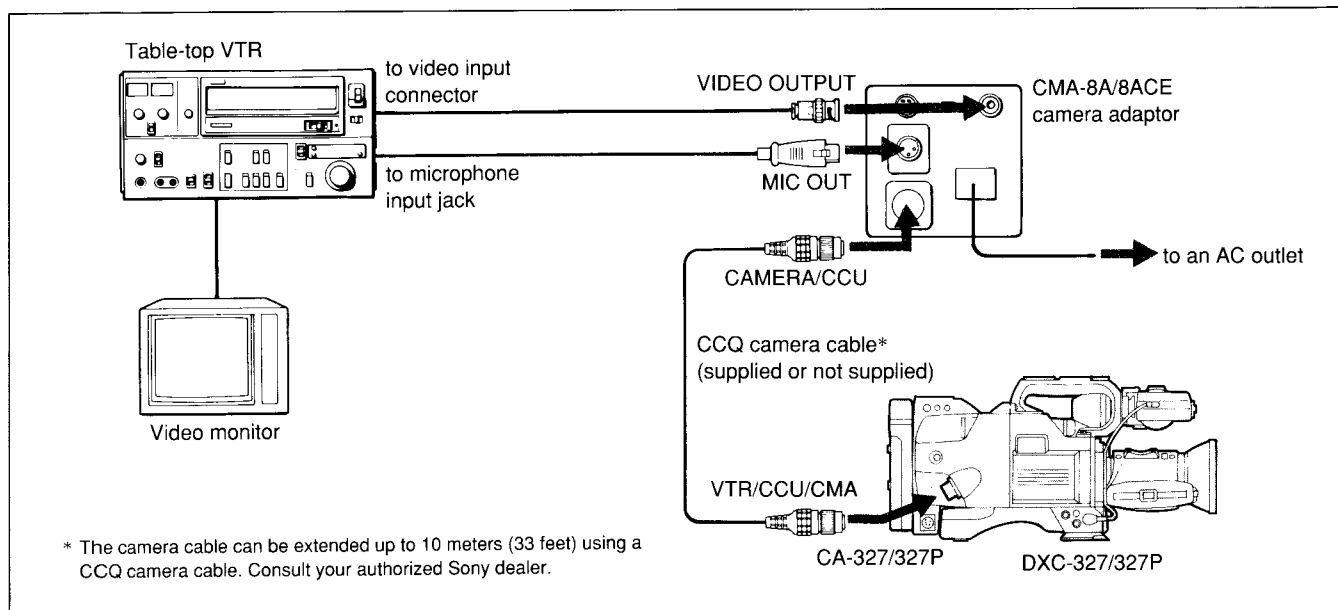
To avoid recording noise made while handling the camera, connect an external microphone to the MIC IN connector on the camera adaptor. The built-in microphone will be automatically shut off.

Earphone (not supplied)

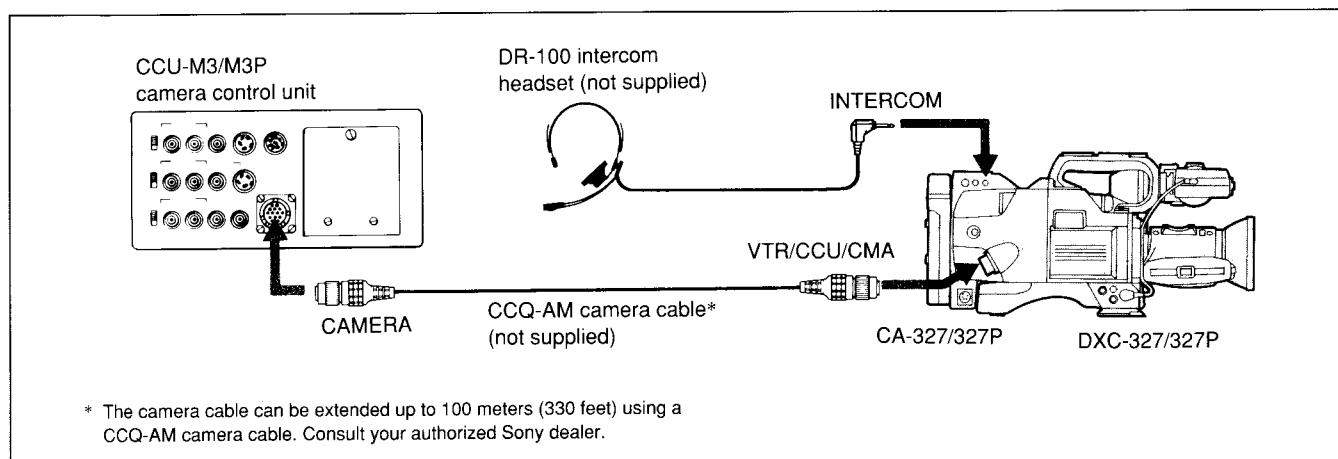


Connections

Connecting a Table-Top VTR



Connecting a Camera Control Unit



Notes on operation with the CCU-M3/M3P

- When the camera is connected to the CCU-M3/M3P camera control unit, set the selectors as follows:
 - WHITE BAL selector: Any setting
 - VTR selector on the camera adaptor: 1
- When the camera is connected to the CCU, the following switches will not operate: GAIN selector, WHITE BAL selector, H PHASE control, SC PHASE control and SC phase selector.
- The MIC IN connector of the camera adaptor cannot be used as an external microphone input.

- When the CCU's W/B BALANCE selector is set to PRESET or MANUAL, it adjusts the white balance and takes priority over the camera. If the W/B BALANCE selector is set to AUTO, the white balance can be adjusted by either the camera or the CCU. Automatic black balance adjustment is performed by setting the AUTO W/B BAL switch of the camera to BLK when the W/B BALANCE selector on the CCU is set to AUTO or PRESET.

Using the Camera with a VTR

You will be able to use this camera in various ways, depending on the VTR you have connected to it. You will need to set the VTR selector on the camera adaptor to the correct position for the connected VTR. If you have not set the selector to the correct position, the VTR may not operate properly. Please consult your local authorized Sony dealer if you want to use a VTR other than those shown below.

VTR selector	Microphone level	Connected VTR	Remote control of VTR start/stop	REC indicator		BATT alarm indication	Audio monitor (on the camera)	Picture shown on the viewfinder		Cable for connection	Power supply from VTR to camera (See note 1.)	AC power adaptor for VTR	
				REC indication	VTR alarm			During recording (picture from the camera)	During playback (picture from the VTR)				
1	-60 dB (See note 2.)	BVU-150 (NTSC) BVU-150P (PAL)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	CCQ-nBRS	Yes	AC-500 (NTSC) AC-500CE (PAL)	
		VO-6800 (NTSC) VO-6800PS(PAL)											
2	-60 dB	VO-8800 (NTSC) VO-8800PS (PAL)			No	No	No			Yes (See note 3.)	CCQJ-2	No	CMA-8A (NTSC) CMA-8ACE (PAL)
3	-20 dB	AG-6400 (Panasonic, NTSC, PAL)											
4	-20 dB	AG-7400 (Panasonic, NTSC, PAL)					Yes		CCQ-nBRS				

Notes

- For VTRs with "No" in the column "Power Supply from VTR to Camera", the power supply from the VTR is insufficient to operate the camera. Therefore, an independent power source must be provided for the camera.
If the camera is operated without being powered independently, heat will build up in the VTR or AC power adaptor, and the protective circuit will activate. Consequently, the VTR or AC power adaptor will not operate properly.
- When the VO-6800/6800PS portable VTR is connected to the camera, set the VTR's -20 dB/-60dB camera microphone input level selector to -60dB.
- A picture from a VTR can be seen only when the RET button on the zoom lens is pressed.

If the operating conditions of the VTR are different from those shown above, the VTR might not operate normally. If you use a VTR other than those shown above, for which the VTR selector must be set to "3" or "4", check the signal levels and other operating conditions.

Power Sources

Note on priority of power sources

When the CA-327/327P camera adaptor is attached, the DXC-327/327P operates on any of the following three types of power sources:

- (1) Power from the DC IN connector on the camera adaptor
- (2) Power from the battery pack compartment built into the camera adaptor
- (3) Power from the VTR/CCU/CMA connector on the camera adaptor
 - Power from the VTR when a portable VTR is connected
 - Power from the CCU when a CCU-M3/M3P camera control unit is connected
 - Power from the camera adaptor when a CMA-8A/8ACE camera adaptor is connected

When the EVV-9000/9000P Hi8 format video cassette recorder is attached, the camera operates on either of the following two types of power sources.

- (1) Power from the DC IN connector on the camera adaptor
- (2) Power from the battery pack compartment built into the camera adaptor

When two or three of the power sources (1) to (3) are simultaneously connected to the camera, only one of them is used according to numerical order priority, and the other power sources are automatically cut off.

Power from the DC IN Connector

When the CA-327/327P camera adaptor is attached, its DC IN connector enables to supply power from an external DC power supply (12V DC). When the video cassette recorder is attached, the camera operates on an AC power supply using the CMA-8A/8ACE camera adaptor.

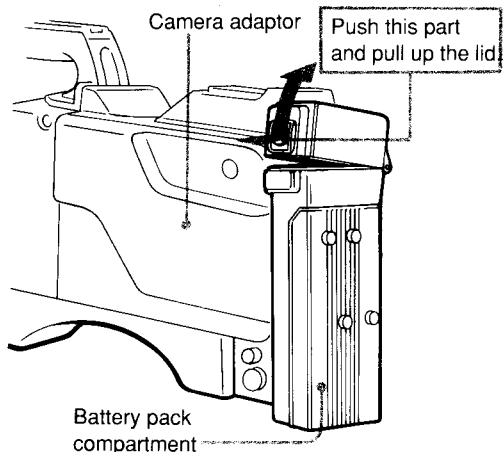
When two or three power sources are used simultaneously, power is taken from the DC IN connector.

Power from a Battery Pack

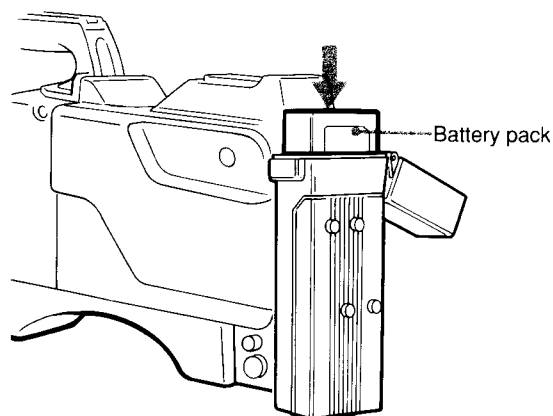
Use a fully charged NP-1B or NP-1A battery pack (not supplied) by inserting it into the battery pack compartment on the camera adaptor or video cassette recorder.

Installing the battery pack

1 Pull up the lid of the battery case.



2 Install the battery pack, and close the lid.



Battery life

Continuous operation time

When a camera adaptor is attached, the camera and viewfinder can operate continuously for up to the following times:

When using one fully charged NP-1B: About 150 minutes

When using one fully charged NP-1A: About 110 minutes

When a EVV-9000/9000P video cassette recorder is attached, the camera and viewfinder can operate continuously for up to the following times:

When using one fully charged NP-1B: About 85 minutes

When using one fully charged NP-1A: About 65 minutes

Battery life warning

When the battery is nearly exhausted, the warning "LOW BATT." appears on the viewfinder screen. If you continue to use the battery after the "LOW BATT." warning has appeared, the BATT indicator of the viewfinder also lights up to indicate that the battery must be replaced immediately.

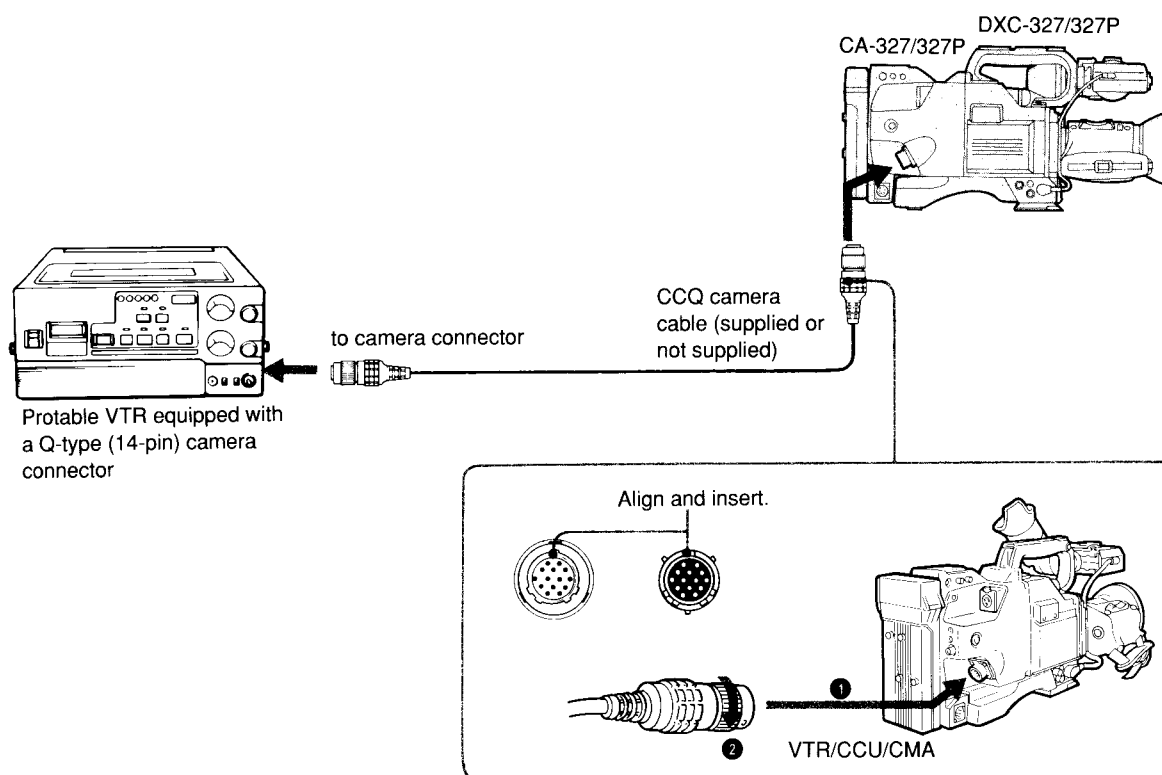
Battery charging

Recharge the NP-1B or NP-1A battery pack before each use, using the battery charger shown in the following table. The battery charging times are as shown below. For details on recharging, refer to the battery charger's instruction manual.

Battery pack	Battery charger	Charging time
NP-1B	BC-1WB	About 95 min.
NP-1A	BC-1WB	About 70 min.
	BC-1WA	About 70 min.

Power from the VTR/CCU/CMA Connector of the Camera Adaptor

Power from a portable VTR



Note

- The life of the batteries installed in the portable VTR is indicated by the BATT indicator of the viewfinder. (See page 50.) Refer to the VTR's instruction manual for information on the power supply to the VTR.

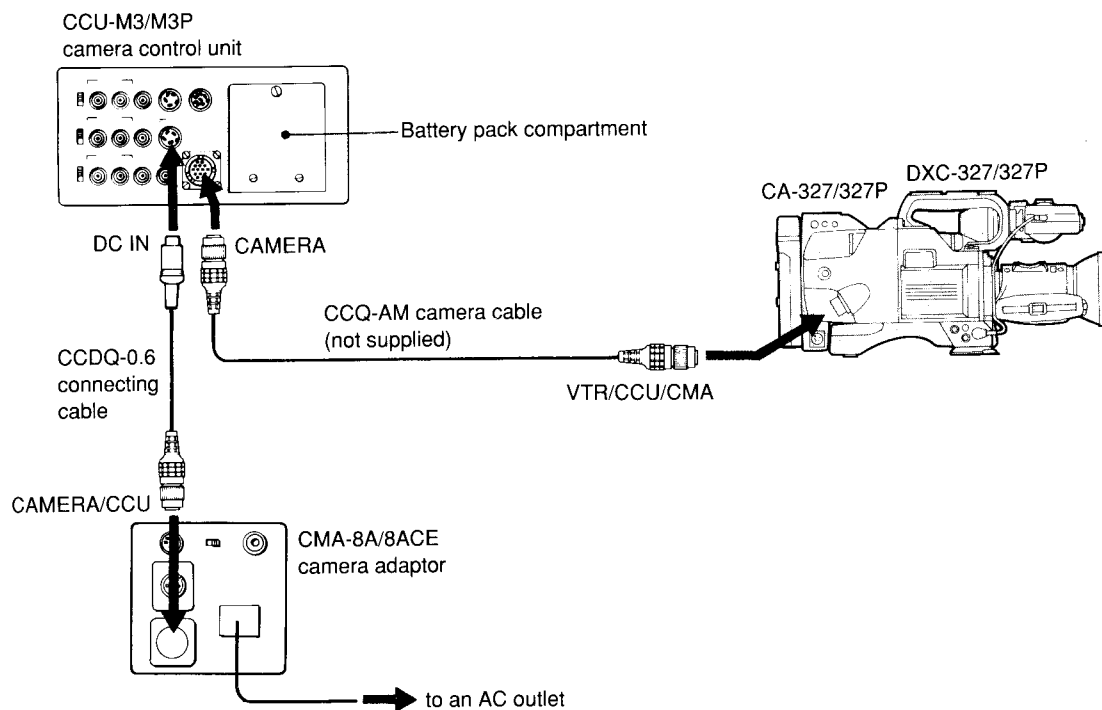
Caution

Before operating the camera, make sure that the power supplied from the VTR to the camera is sufficient. If the power supply capacity of the VTR is not sufficient, the camera must be powered independently.

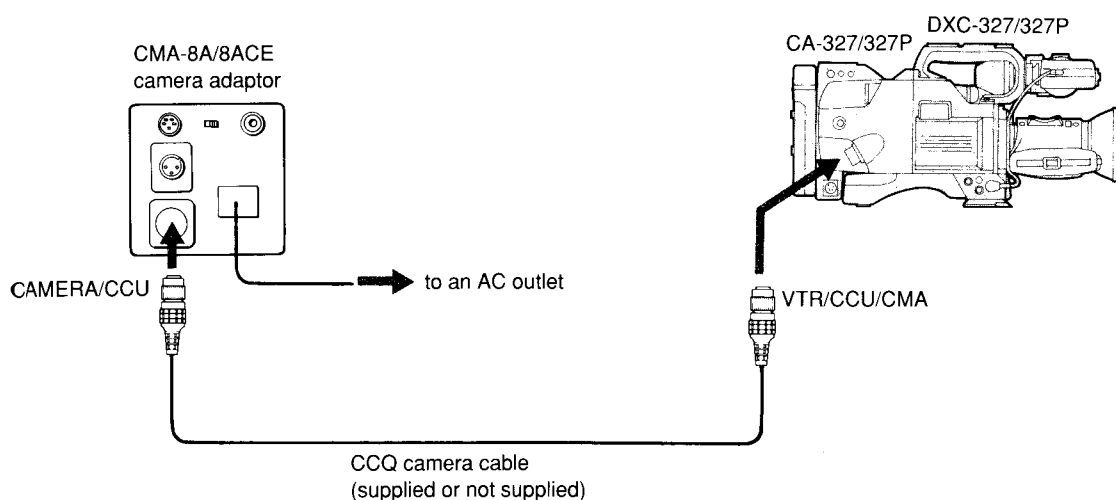
Power from a CCU-M3/M3P camera control unit

When the CCU-M3/M3P camera control unit is powered by the battery pack, the life of the battery pack installed in the CCU is indicated by the BATT indicator of the viewfinder.

For details on the power sources for the CCU, refer to the CCU's instruction manual.

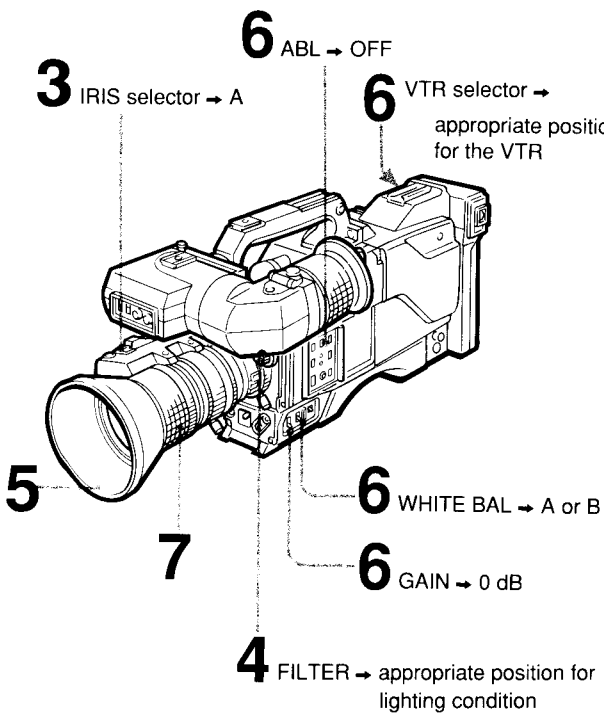


Power from a camera adaptor



Basic Operations

Basic Operation of the Camera

 <p>3 IRIS selector → A</p> <p>6 ABL → OFF</p> <p>6 VTR selector → appropriate position for the VTR</p> <p>5</p> <p>7</p> <p>6 WHITE BAL → A or B</p> <p>6 GAIN → 0 dB</p> <p>4 FILTER → appropriate position for lighting condition</p>	<p>1 Check that the connection of the equipment, such as VTR, is correct. (See pages 24 to 26.)</p>
	<p>2 Turn on the power switches of the camera and connected equipment.</p>
	<p>3 Set the IRIS selector on the zoom lens to A. (See page 37.)</p>
	<p>4 Select the appropriate position of the FILTER selector for the lighting condition. (See page 38.)</p>
	<p>5 Remove the lens cap.</p>
	<p>6 Set the following switches: ABL switch → OFF GAIN switch → 0 dB WHITE BAL selector → A or B (See page 40.) VTR selector on the camera adaptor → Appropriate position depending on the VTR used</p>
	<p>7 Point the camera to an object which is more than one meter (40 inches) from the lens.</p>
	<p>8 Turn the focus ring to adjust the focus while viewing the picture on the monitor or viewfinder screen.</p>

This procedure is the basic camera operation. To get the most from this camera, the adjustments mentioned on the following pages are recommended.

Recording with a Portable VTR

- 1 Turn the camera and the connected equipment on.**
- 2 Set the VTR to the record standby mode.**
- 3 Adjust the black balance and white balance.**
For details, refer to "Black Balance Adjustment" and "White Balance Adjustment" on pages 39 and 40.
- 4 Point the camera at an object and adjust the lens.**
 - Iris (See page 37.)
 - Zoom (See page 43.)
 - Close-up (See page 45.)
 - Focus
- 5 To start recording,** press the VTR button on the camera, the VTR START/RETURN VIDEO button on the camera adaptor or the VTR button on the lens. The REC/TALLY indicator in the viewfinder will light during recording.
- 6 To stop recording,** press the VTR START/RETURN VIDEO button or the VTR button used in step 5 above again.

Note

For a brief period after the camera has been turned on, the BATT indicator of the viewfinder may light and random characters may be displayed on the viewfinder screen. This is not a malfunction.

Recording with a Table-Top VTR

The operating procedure is almost the same as when recording with a portable VTR except for the following:

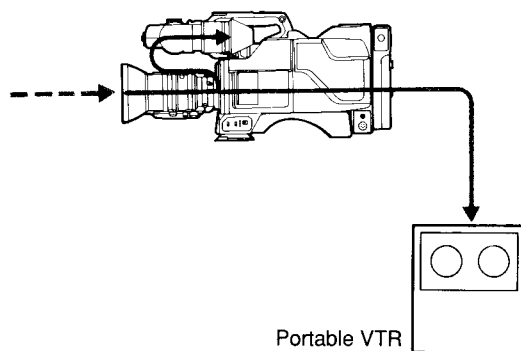
- The VTR button on the camera, the VTR START/RETURN VIDEO button on the camera adaptor and the VTR button on the lens do not function. Recording must be started and stopped with the function buttons on the VTR.
- The REC/TALLY indicator in the viewfinder does not function.
- The E-E mode picture (return video) and the playback picture cannot be monitored on the viewfinder screen.

Basic Operations

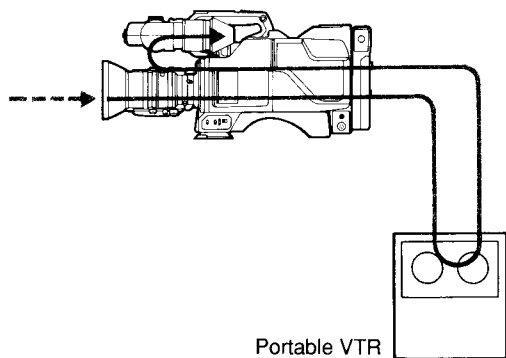
Monitoring the picture

The following three types of pictures can be seen on the viewfinder screen when the camera and the VTR are connected with the CCQ camera cable. (For details on the pictures which can be shown on the viewfinder screen, see page 27.)

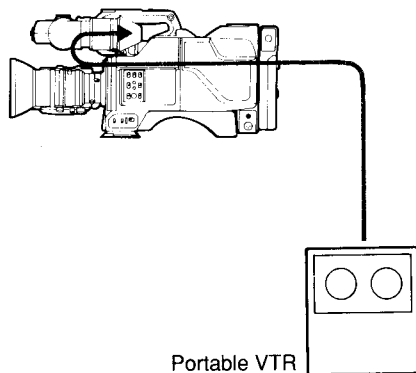
Picture picked up by the camera (during recording)



E-E mode picture from the VTR (return video) when the RET button on the lens is pressed (during recording)



Playback picture (during playback)



Notes

- While the playback picture from the VTR is displayed on the viewfinder screen, a part of the camera's video signals, such as a sync signal, may be mixed with the playback picture so that streaks of noise roll vertically or horizontally.
- With some types of VTR, you may not be able to monitor the picture.

Monitoring the audio

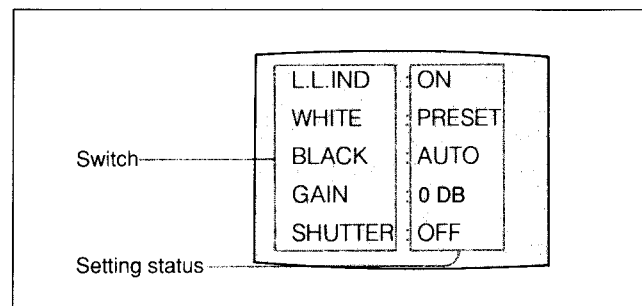
You can monitor the audio signal during recording and reviewing by connecting an earphone to the EAR jack. Note, however, that with some types of VTR, you may not be able to monitor the audio. (See page 27.)

Adjustment

How to Know the Current Settings

The viewfinder screen shows you the settings of the switches on the camera head, camera adaptor, and zoom lens. If necessary, change the setting by the following procedure described after this section.

Press the DISP CHG button several times until the following display appears on the viewfinder screen.



The characters tell you the setting status of the switches as shown below.

Switch indications	Meaning	Setting status	Meaning
L.L. IND	Setting the "LOW LIGHT" indication	ON	"LOW LIGHT" is displayed.
		OFF	"LOW LIGHT" is not displayed.
WHITE	White balance adjustment mode	PRESET	For the factory preset value
		AUTO/A or AUTO/B	For automatic adjustment (The white balance has been adjusted automatically using the value stored in memory A or B.)
BLACK	Black balance adjustment mode	AUTO	For automatic adjustment
		MANUAL	For manual adjustment using the CCU-M3/ M3P camera control unit or RM-M7G camera remote control unit
GAIN	Setting the video output level	0 DB, 9 DB, or 18 DB	The video output level is 0 dB, 9 dB or 18 dB.
SHUTTER	Setting the shutter speed	OFF	The shutter speed cannot be changed.
		Shutter speed set	The set shutter speed is displayed.

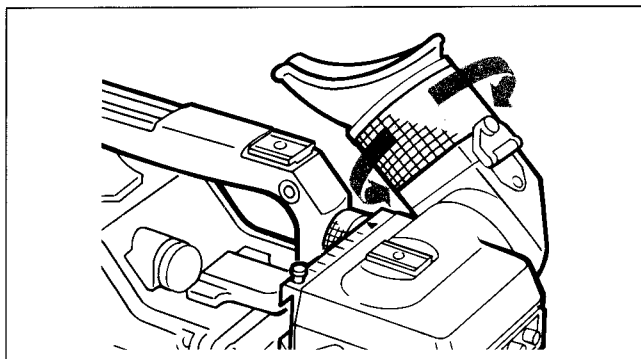
Adjustments

Electronic Viewfinder Adjustment

After adjusting the viewfinder and the eye cup, make the following adjustment so that the viewfinder screen can be seen comfortably.

Dioptr adjustment

Each operator's eyesight is different, so it may be necessary to adjust the diopter when a new operator uses the viewfinder. Turn the diopter ring after focusing. The adjustable range is from -1 D to -3 D.



Viewfinder's contrast and brightness adjustments

- 1 Set the BARS switch on the camera to ON.
- 2 Adjust the contrast and brightness with the CONTR and BRIGHT controls on the viewfinder, referring to the color bar signals on the viewfinder screen.
- 3 Set the BARS switch to OFF after adjustment.

Viewfinder's sharpness adjustment

Set the PEAKING switch on the viewfinder to ON. The picture on the viewfinder screen will be sharpened so that the lens can be easily focused.

Note

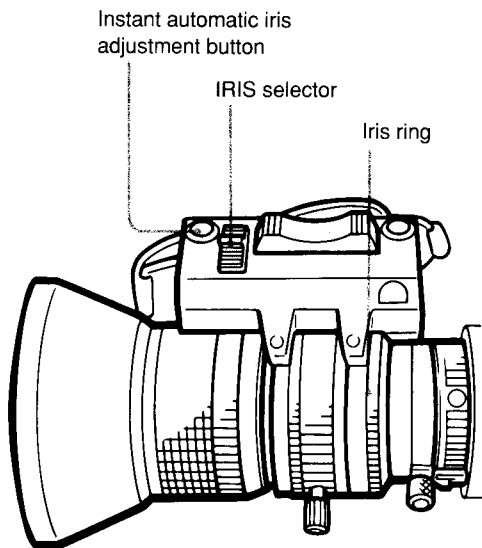
The settings of the PEAKING switch, and the CONTR and BRIGHT controls do not affect the video output signal of the camera.

Video Monitor Adjustment

When a color video monitor is being used to monitor a picture, adjust the color of the monitor as follows.

- 1 Set the BARS switch to ON.
- 2 Adjust the color and hue controls on the monitor while viewing the color bars on the monitor screen.
- 3 Set the BARS switch to OFF.

Iris Adjustment



Automatic adjustment

Set the iris selector to "A", and the iris will be automatically adjusted to the brightness of the object. Normally use the "A" position.

Manual adjustment

Set the iris selector to "M", and turn the iris ring. Manual adjustment may be effective when recording an object against a bright sky or a scene with high contrast.

Temporary automatic adjustment

While the instant automatic iris adjustment button is kept depressed during manual iris adjustment, the iris is automatically adjusted. When the button is released, the iris will be fixed at the value that has just been obtained until the iris is adjusted again manually.

Selecting the automatic iris reference level

When adjusting the video level of a back-lit subject, you can change the automatic iris reference level. Use the UP/ON or DOWN/OFF button on the camera head to select the setting value of the reference level by checking it on the viewfinder screen.

The selectable value is as follows:

- -1.0
- -0.5
- NORMAL (reference value)
- 0.5
- 1.0

The setting value is kept in the memory of the camera.

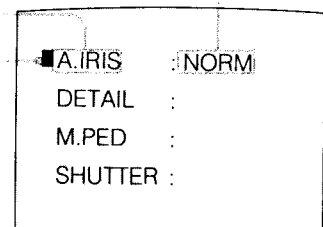
Note

When connecting the CCU-M3/M3P camera control unit or RM-M7G camera remote control unit, you cannot change the automatic iris reference level with the controls on the camera. Change the level from the CCU-M3/M3P or RM-M7G.

- 1 Press the DISP CHG button several times until the following display appears on the viewfinder screen.**

Current setting value
Reference level of the
automatic iris

Blinks...



- 2 Select the setting value. To raise the value, press the UP/ON button. To lower the value, press the DOWN/OFF button. To reset to NORMAL, press the UP/ON and DOWN/OFF button simultaneously.**

Adjustments

Filter Selection

The color temperature changes according to lighting conditions. To compensate for this, use the color temperature conversion filter indicated in the table below.

Filter number	Color temperature	Lighting conditions
1	3200K	Iodine lamp, sunrise, sunset
2	5600K + 1/8 ND*	Bright outdoor
3	5600K	Cloudy, rainy

*ND: Neutral Density

If the selected filter is not suitable for the lighting conditions, a warning such as "LOW LIGHT" will be shown on the viewfinder screen. For details on the warning, refer to "Warning indicators on the Character Display" on page 50.

When to use an ND filter

Exceptionally bright scenes such as sunny days at the beach in summer or on snow fields in winter will look "washed out" when recorded. To make these scenes be recorded naturally, an ND filter (set the FILTER selector to the 2 position) is required.

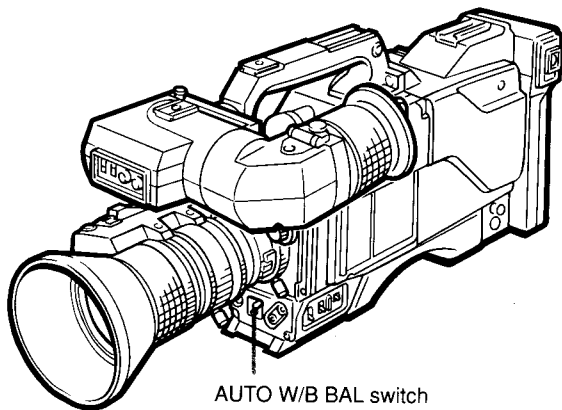
Color temperature and light source

Color temperature (K)	Light source
10.000	Clear sky
8.000	Slightly overcast
7.000	Cloudy rainy
6.000	Fluorescent lamp (daylight)
5.000	Direct sunlight
4.000	One hour before sunset or after sunrise
3.500	Fluorescent lamp (off white) Studio lamp Halogen lamp
3.200	
3.000	Tungsten lamp
2.500	30 min. before sunset or after sunrise
2.000	Sunset or sunrise
	Candle light

Black Balance Adjustment

Adjusting the black balance adjustment is required in order to obtain picture clarity and lifelike color reproduction. When executing the automatic black balance, both the black set* and black balance are adjusted simultaneously. The adjusted black balance value is kept in the memory of

the camera and you need not readjust it. Readjust the black balance if "MEMORY NG" appears on the viewfinder screen, if the camera has not been used for long time, or if the ambient temperature has changed a lot.



Press the AUTO W/B BAL switch to the BLK position. When you hear a click, release the switch.

"AUTO BLACK -OP-" appears on the viewfinder screen during adjustment, and "AUTO BLACK -OP-" appears on the viewfinder screen when adjustment is completed.

If the black balance cannot be adjusted

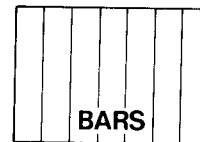
The characters shown on the right are displayed on the viewfinder screen.

AUTO BLACK
—NG—
IRIS:
NOT CLOSED
TRY AGAIN

The iris is not closed during adjustment of the black balance. This may occur when the lens connector is not connected correctly, or when some trouble occurs on the lens.

When the video camera outputs the color bar signal

The automatic black balance cannot be adjusted. The following characters are displayed on the viewfinder screen. Set the camera so that the normal video signal is output, and readjust it.



Notes

- When the black balance is adjusted, the iris automatically closes. If the iris selector is set to the M position, the iris does not open even if the black balance adjustment is finished. It is necessary to open the iris manually.
- When the W/B BALANCE switch on the camera control unit is set to "MANUAL", you cannot adjust the black balance by the camera.

* Black set

The deviation of black level between the R,G, and B channels.

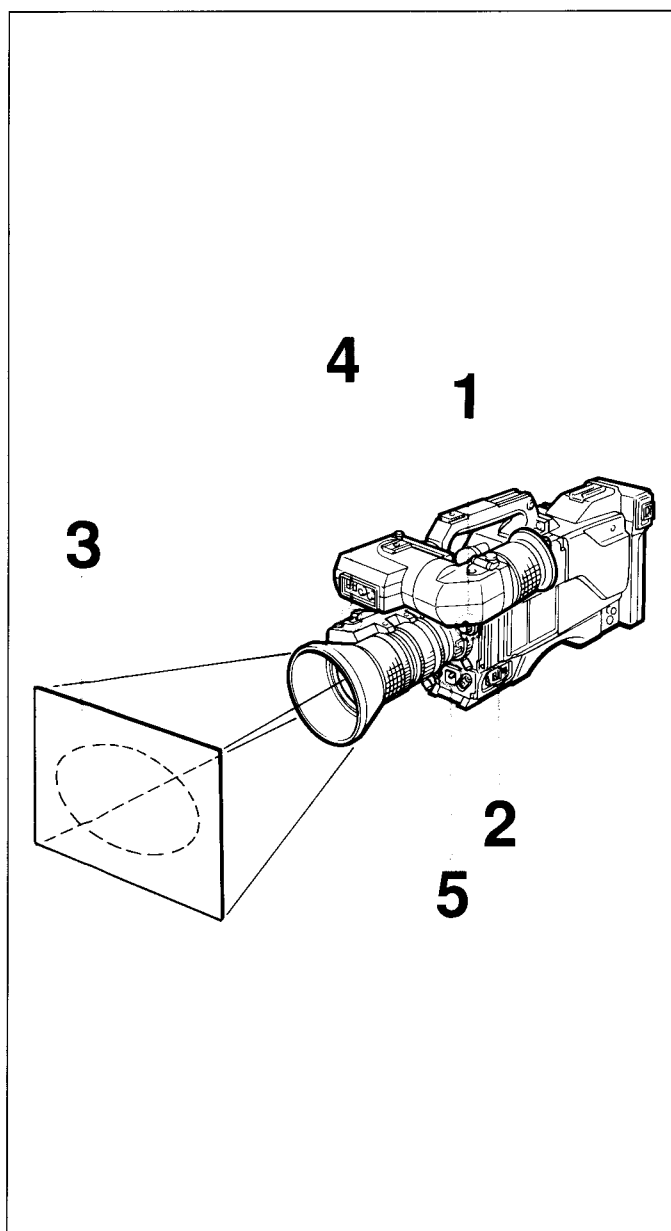
Adjustments

White Balance Adjustment

The white balance should be adjusted so that a white object is reproduced as white and lifelike color is obtained. The white balance changes depending on the lighting conditions. The camera has two memories, A and B, to store the adjusted white balance values. You can store two adjusted values under two different lighting conditions and recall

either of the values to adjust the white balance depending on the condition.

If "MEMORY NG" appears in the viewfinder screen, readjust the white balance.



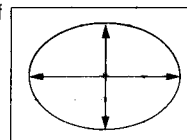
1 Select the appropriate position of the FILTER selector on the camera head depending on the lighting conditions.

2 Set the WHITE BAL selector to A or B.

3 Zoom up on a white object such as a white cloth or white paper with the same lighting conditions as those during shooting. The minimum white area required for adjustment is as follows.

Center of the screen and center of this oval.

About 80 % of the screen height



Place the white object in the oval. No other light object should appear inside.

About 80 % of the screen width

4 Set the IRIS selector on the lens to A.

5 Press the AUTO W/B BAL switch to the WHT position. When you hear a click, release the switch. "AUTO WHITE -OP-" appears on the viewfinder screen during adjustment, and "AUTO WHITE -OK-" appears on the viewfinder screen when adjustment is completed. The adjusted white balance value is stored in the selected memory.

When you have no time to adjust the white balance

Select the appropriate position of the FILTER selector on the camera head depending on the lighting conditions, then set the WHITE BAL selector to PRE. You can obtain the approximate white balance.

If the white balance cannot be adjusted

The following characters are displayed on the viewfinder screen.

Readjust the white balance after the required measures.

<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>AUTO WHITE — NG —</p> <div style="border: 1px dashed black; width: 80px; height: 30px; margin: 0 auto;"></div> <p>TRY AGAIN</p> </div>	
Display	Causes and measures
LOW LIGHT	Light is insufficient. Add illumination or raise the video output level with the GAIN selector.
??	The object is not white or very bright light appears in the picture. Change the object to an appropriate one.
C. TEMP. LOW CHG. FILTER	Color temperature is too low. Select the appropriate filter with the FILTER selector.
C. TEMP. HI CHG. FILTER	Color temperature is too high. Select the appropriate filter with the FILTER selector.

If the automatic white balance adjustment cannot be made

In the following four cases, the white balance cannot be adjusted automatically even if the AUTO W/B BAL switch pushed to the WHT position. On the viewfinder screen, the following characters will be displayed.

When the WHITE BAL selector is set to the PRE position	WHITE: PRESET
When the CCU is connected, and the manual white balance adjustment is selected on the CCU.	WHITE: MANUAL
When the color bar signal is output	BARS

Adjustments

Contrast Adjustment

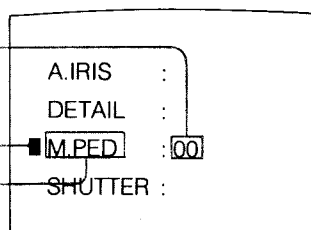
To adjust the contrast, change the master pedestal level. When the master pedestal level is raised, the dark portion of the picture brightens, and when the level is lowered, the portion darkens. You can change the level from about -30% to +30% of the reference level (0.7 V) increments of in about 1% . The adjusted master pedestal level is kept in the memory of the camera.

- 1 Press the DISP CHG button several times until the following display appears on the viewfinder screen.

Current setting value:
the percentage of the
reference level

Blinks.

Master pedestal level



- 2 Change the master pedestal level. To raise the level, press the UP/ON button on the camera head. To lower the level, press the DOWN/OFF button on the camera head. To reset the level to the reference level, press the UP/ON and DOWN/OFF buttons simultaneously.

Notes

- To set the master pedestal level by using the UP/ON and DOWN/OFF buttons while monitoring on a waveform monitor, set the ABL switch to OFF. If the ABL switch is set to ON, the master pedestal level is automatically adjusted, so you cannot adjust it manually.
- When the CCU-M3/M3P camera control unit or RM-M7G camera remote control unit is connected to the camera, the master pedestal level setting mode cannot be controlled by the camera. Operate the CCU-M3/M3P or RM-M7G to change the level.

Shutter Speed Selection

The shutter speed is factory-set to 1/100 for NTSC and 1/60 for PAL. You can change the shutter speed if necessary. Select the shutter speed from the following:
For NTSC: 1/100, 1/250, 1/500, 1/1000, 1/2000
For PAL: 1/60*, 1/250, 1/500, 1/1000, 1/2000
The selection is kept in the memory of the camera.

- 1 Set the SHUTTER switch on the camera head to ON.

- 2 Press the DISP CHG switch several times until the following display appears on the viewfinder screen.

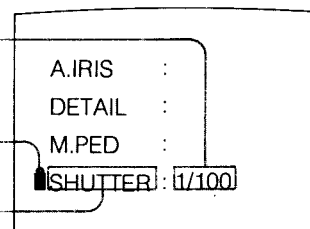
Note

If the SHUTTER switch is set to OFF, "OFF" appears at the current setting value.

Current setting value

Blinks.

Shutter speed



- 3 Select the shutter speed. To raise the shutter speed value, press the UP/ON button on the camera head. To lower the value, press the DOWN/OFF button on the camera head. To reset the value to 1/100 (for NTSC) or 1/60 (for PAL), press the UP/ON and DOWN/OFF buttons simultaneously.

*Note on the setting when the RM-M7G camera remote control unit is used with the camera

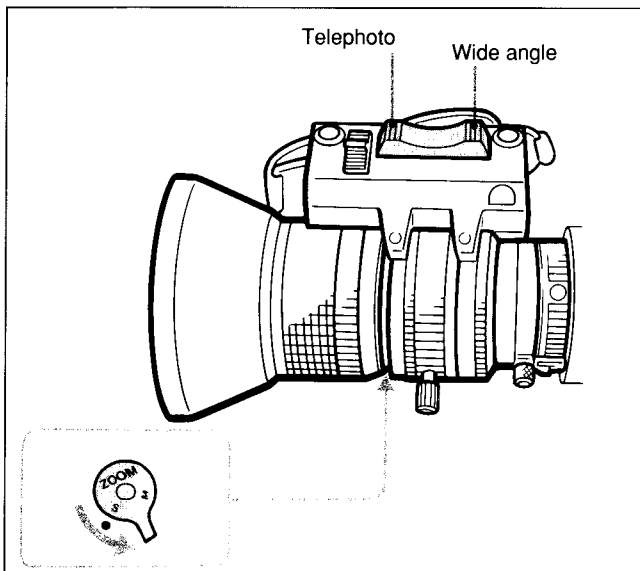
When you are using the RM-M7G to control the camera, the 1/100 setting on the RM-M7G sets the camera shutter speed to "1/60" and "1/60" appears on the viewfinder screen. (This is to obtain a flickerless picture when you are shooting at a computer display.)

Advanced Operations

Zooming

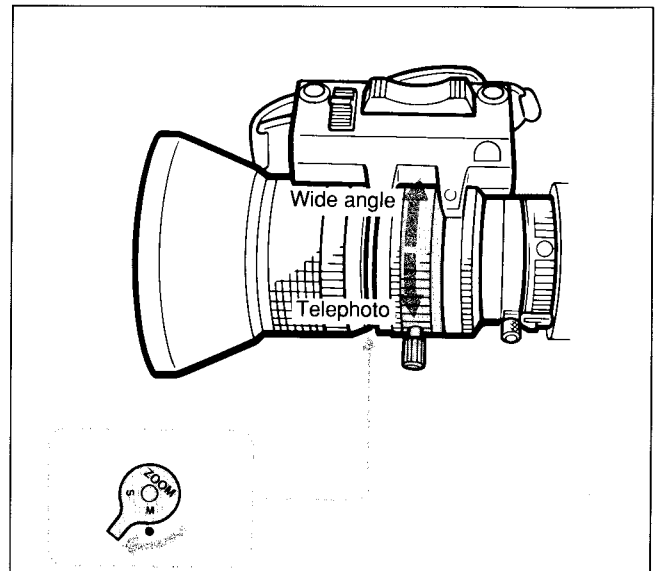
Motorized zooming

You can zoom smoothly. Zooming is faster when the motorized zoom switch is pressed down all the way and becomes slower when it is pressed down only slightly.



Manual zooming

Manual zooming allows more precise control of the zooming speed.



Tips on Zooming

Zoom in

From wide angle to telephoto. Used to bring a distant object up close.

Zoom out

From telephoto to wide angle. Used to move back from an object and gradually reveal the object's surroundings.

Following

Zoom up on the subject and follow its movement with the camera. This zoom effect is used, for example, to emphasize the speed of the subject by making the background rush past in a blur.

Correct focusing

If the subject is in focus in the telephoto position, it will remain in focus when you zoom back to wide angle.

For a more stable picture

We recommend placing the camera on a tripod when zooming. If you zoom with the camera on your shoulder, stand as steadily as possible.

Positioning the object at the center of the screen

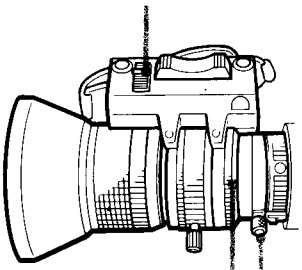
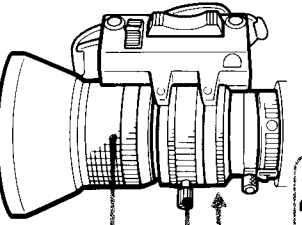

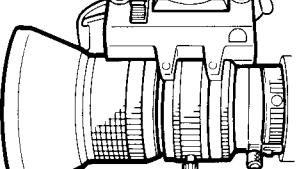
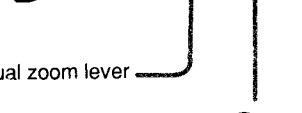


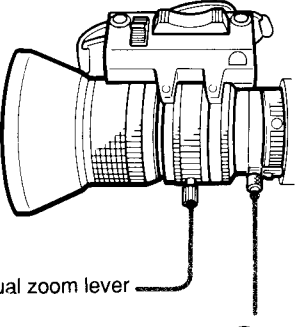
For zoom-in operation, adjust the focus in the telephoto position, and set to the wide angle position. Then start to zoom in. Make sure that the object stays at the center of the screen while you are zooming in.

Advanced Operations

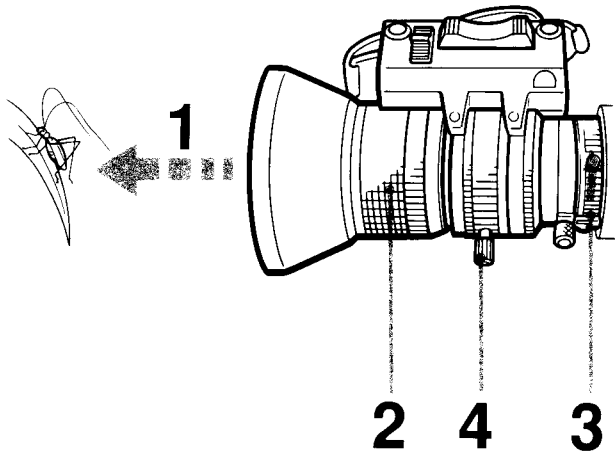
Flange Focal Length Adjustment

The proper flange focal length adjustment ensures that the object is in focus both at the wide-angle position and at the telephoto position when zooming. Once the flange focal

length adjustment has been made, readjustment is not necessary as long as the lens stays mounted on the same camera.

 <p>1 IRIS selector → "M"</p>	<p>1 Set the IRIS selector to M.</p>
 <p>2 Iris ring → 1.4</p>	<p>2 Set the iris ring to 1.4. Position the supplied chart and illuminate it so that the proper video level is obtained when the iris ring is set to 1.4.</p>
 <p>3 Ff adjustment ring</p>	<p>3 Loosen the screw on the Ff adjustment ring.</p>
 <p>4 ZOOM selector → M</p>	<p>4 Set the ZOOM selector to M.</p>
 <p>5 Manual zoom lever</p>	<p>5 Turn the manual zoom lever to the 90 telephoto position.</p>
 <p>6 Focus ring</p>	<p>6 Turn the focus ring until the chart at about three meters (10 feet) from the lens is in focus.</p>
 <p>7 Manual zoom lever</p>	<p>7 Turn the manual zoom lever to the 7.5 wide-angle position.</p>
 <p>8,10 Ff adjustment ring</p>	<p>8 Turn the Ff adjustment ring and focus on the chart used in step 6.</p>
	<p>9 Repeat steps 5 through 8 until the chart is in focus both at the telephoto position and at the wide-angle position.</p>
	<p>10 Tighten the screw on the Ff adjustment ring firmly.</p>

Close-Up – Shooting Small or Nearby Objects



The close-up or macro function lets you zoom in flowers, insects and even photographs. The minimum distance from the lens to the object is 10 mm in the 7.5 wide-angle zoom position.

1 Adjust the distance between the lens and the object to get the desired image size.

2 Set the focus ring to the ∞ (infinite) setting.

3 Turn the MACRO ring while pressing the button in the direction of the MACRO arrow until it stops.


4 Focus on the object by turning the manual zoom lever with the ZOOM selector set to M.

When the close-up operation is completed, return the MACRO ring to its original position.

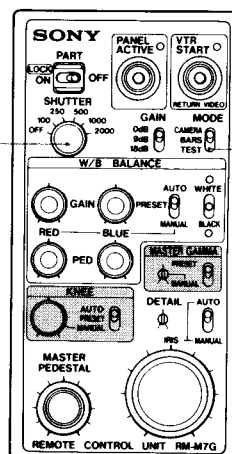
Notes

- If you wish to reduce the object's size on the screen, first adjust the focus following steps 1 through 4 above, then turn the MACRO ring slightly toward its original position and adjust the focus with the manual zoom lever again.
- If the focus ring is set to ∞ while the MACRO ring is turned to "MACRO", the focus can be continually adjusted from the close-up position to ∞ with the manual zoom lever.

Caution: When using the RM-M7G remote control unit

-  : These switches and controls do not function.

When the unit is connected to the DXC-327P and this selector is set to 1/100 sec., the actual shutter speed and displayed value will be 1/60 sec..



Note that a color bar signal is output even when this switch is set to the TEST position.

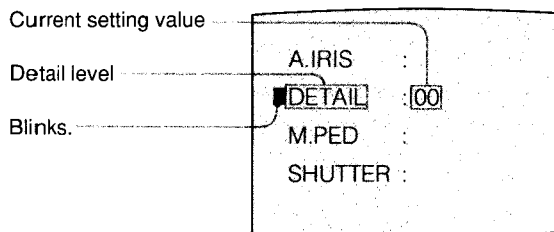
Advanced Operations

Increasing and Decreasing the Sharpness of the Picture

You can increase (harden) or decrease (soften) the sharpness of the picture. Change the value of the detail level to increase or decrease the sharpness. The detail level can be set from -99 to +99 of the factory set reference level (00) factory-set.

When the RM-M7G camera remote control unit is connected, the detail level can be changed from the RM-M7G.

- 1 Press the DISP CHG button several times until the following display appears on the viewfinder screen.**



- 2 Change the value of the detail level. To raise the value, press the UP/ON button on the camera head. To lower the value, press the DOWN/OFF button on the camera head. To reset the value to the reference level, press the UP/ON and DOWN/OFF buttons simultaneously.**

Note

If you raise the video output level when raising the detail level, the noise in the picture increases.

Output Level Selection

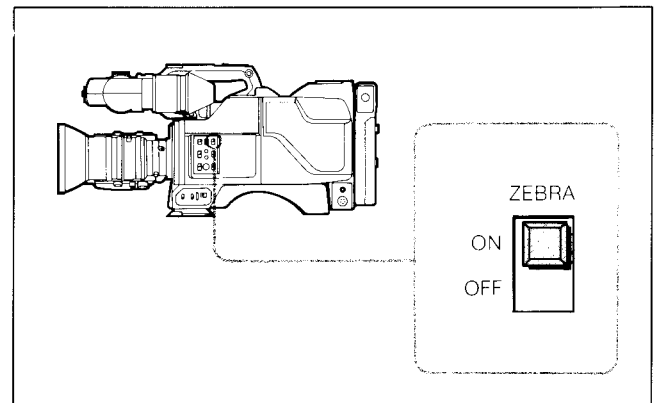
If a clear picture cannot be obtained because of insufficient lighting, set the GAIN selector to the appropriate position. Normally set the GAIN selector to "0 dB".

The video output level can be raised by 9 dB by setting the GAIN selector to "9 dB" and by 18 dB by setting the selector to "18 dB".

Video Level Check

When the ZEBRA switch is set to ON, a zebra pattern will appear on the part of the viewfinder screen where the video output level of the picture is about 70 to 80 IRE (for NTSC) or 490 to 560 mV (for PAL). You can use this zebra pattern as a reference when adjusting the iris manually. Adjust the iris so that the zebra pattern appears over the subject being shot (for example, the face of a back-lit person).

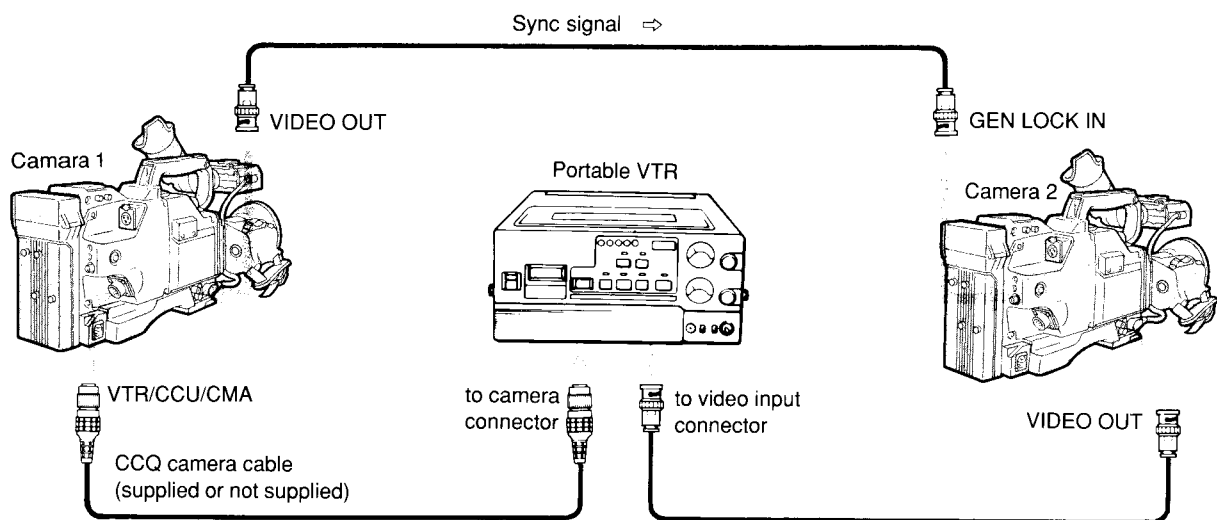
If it is not necessary to use the zebra pattern to adjust the iris, set the ZEBRA switch to OFF.



Synchronizing Two or More Cameras (Without Using a Camera Control Unit)

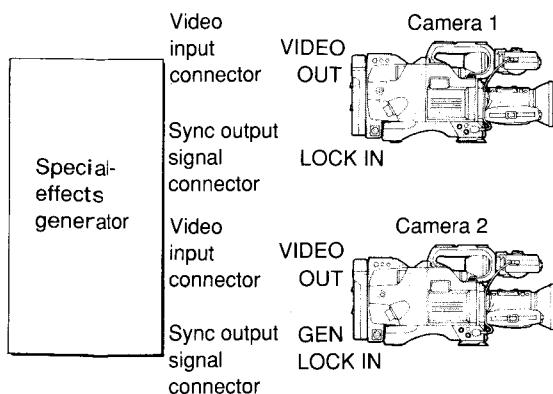
When the BS or VBS signal is connected to the GEN LOCK IN connector on the camera adaptor, the camera synchronizes with the connected signal. Use this connector when two or more cameras are used without a camera control unit.

Example 1



Camera 2 is synchronized with Camera 1.

Example 2



Camera 1 and Camera 2 are synchronized with a special-effects generator.

Adjustment of the picture tone for two or more cameras

When two or more cameras are used simultaneously in connection with a special-effects generator, supply each camera with the same reference signal, and adjust each camera to obtain the same picture tone. Adjust the SC (subcarrier) phase and the H (horizontal) phase following the procedures described below.

Subcarrier phase adjustment

Adjust the subcarrier phase roughly with the SC phase selector, and make fine adjustment using the SC PHASE control. Use a vectorscope to make the adjustment easily.

Horizontal phase adjustment

Adjust the horizontal phase with the H PHASE control. Use a waveform monitor or an oscilloscope to make the adjustment easily.

Viewfinder Display

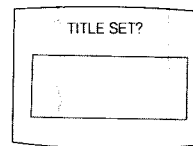
Title Character Setting

This camera has a superimposition function which allows the simultaneous showing of the picture shot by the camera and characters from the built-in character generator on the same screen. If a recording VTR or a monitor is connected to the camera, the superimposed picture can be recorded on the VTR or monitored on the monitor screen. Use the DISP CHG switch, UP/ON button, and DOWN/OFF button to set title characters.

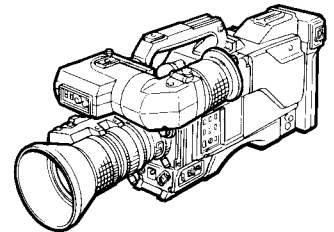
1 Press the DISP CHG switch several times until the following indication appears on the viewfinder screen.

Viewfinder screen

Title character
display position.



If any characters are
stored in the memory,
they are displayed here.



DISP CHG
switch

DOWN/OFF
button

UP/ON
button

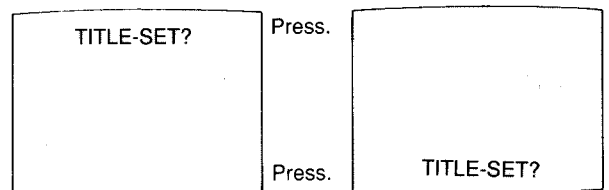
Perform the following procedures if necessary when the indications above are shown on the viewfinder screen.

To clear all the memorized title characters:

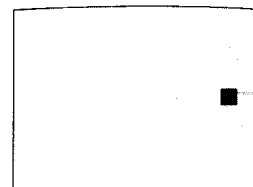
Press the UP/ON button and DOWN/OFF button simultaneously.

To change the position of the title characters:

Press the DOWN/OFF button.



2 Press the UP/ON button to set title characters.



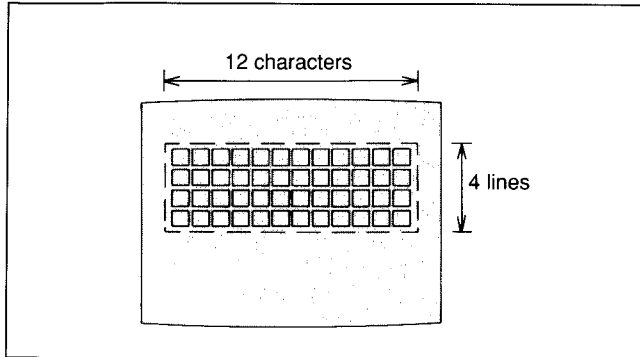
The cursor blinks.

Note

When the camera is used with a VO-8800/8800PS portable VTR, use only the lower character display area, because the VTR tape remaining time is shown in the upper character display area.

Setting procedures

Set title characters one by one using the UP/ON button and DOWN/OFF button. Up to 12 characters can be displayed on one line, and up to 4 lines can be displayed.



Selecting letters

Keep pressing the UP/ON button until the cursor blinks on the desired character.

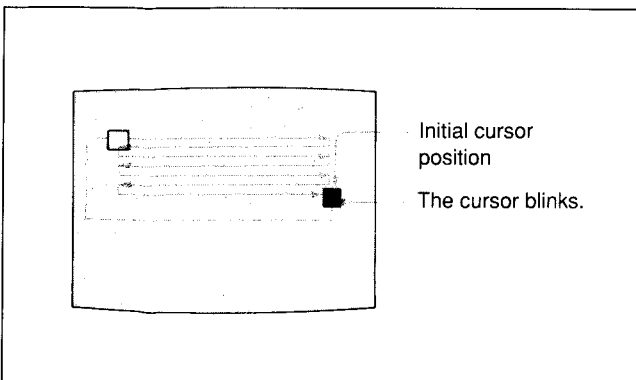
Every time the UP/ON button is pressed, the characters change in the following order.

Scanning order	Punctuation display
■ A B C D E F G H I J K	Space: "■"
L M N O P Q R S T U V W	Question mark: "?"
X Y Z ; < = > ?	Colon: ":"
0 1 2 3 4 5 6 7 8 9 : x , - . /	Semicolon: ";"
	Period: "."
	Comma: ","
	Hyphen: "-"
	Slash: "/"

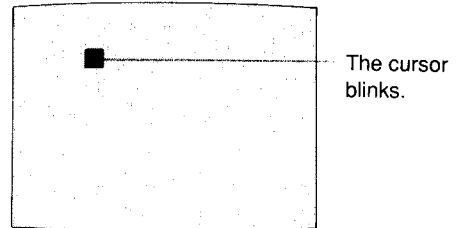
To change the characters in reverse alphabetical order:
Press the DOWN/OFF button with the UP/ON button kept pressed.

Moving the cursor

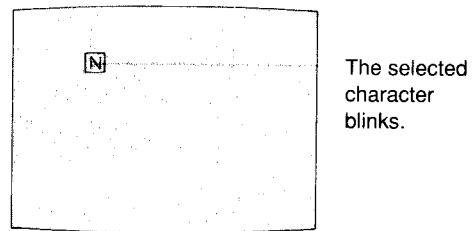
Keep pressing the DOWN/OFF button to move the cursor to the right. To move the cursor to the left, keep pressing the DOWN/OFF button with the UP/ON button kept pressed.



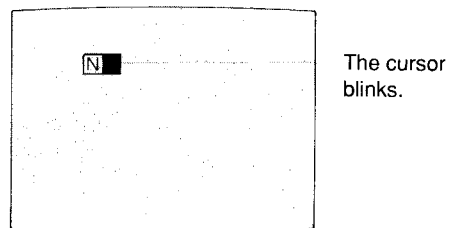
1 Move the cursor to the desired position by pressing the DOWN/OFF button.



2 Select a character by pressing the UP/ON button.



3 Press the DOWN/OFF button to set the selected character, and the cursor moves one space to the right.



Set the title characters by repeating steps 1 through 3 shown above.

Note

To replace a character which has been set with a new one, return the cursor to the character's position, select the desired character with the UP/ON button, and press the DOWN/OFF button.

The characters must be changed one by one as described in this section.

Memory of the title characters

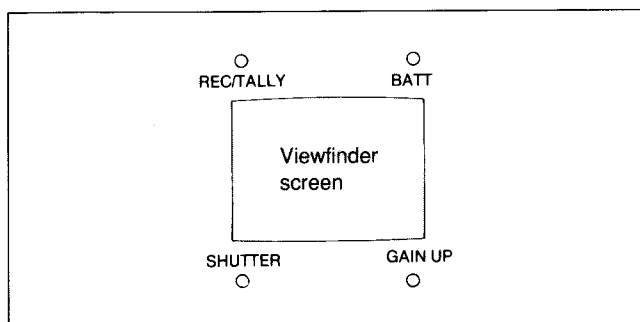
The characters and their displayed positions are stored in the memory after the character display mode is cancelled or after the power is turned off.

Viewfinder Display

Warning Indicators on the Viewfinder

The following indications show the status of the connected camera, VTR, the CCU-M3/M3P camera control unit or RM-M7G camera remote control unit.

Some VTRs might have no indication function by blinking or by lighting. (See page 27.)



Indicator	Operates when...	Blinks	Lights up
REC/TALLY	While recording, using a VTR connected with a CCQ cable	Until the VTR enters the standby mode	During recording
	While using a VTR (equipped with a warning system), which is connected with a CCQ or a CCQK cable	While the VTR is malfunctioning	—
	While using the CCU-M3/M3P	—	When a tally signal is transmitted from a video switcher, etc.
BATT	When the camera is powered by the battery pack	—	When the battery power becomes weak.
	When a VTR is connected to the camera	When the battery power becomes weak.	If you keep on operating the connected equipment after the indicator starts blinking
	When the CCU is connected to the camera*		
SHUTTER	Any time	—	When the SHUTTER switch of the camera is set to ON.
GAIN UP	Any time	—	When the GAIN selector is set to 9 dB or 18 dB

* The Indicator's blinking speed denotes the following:

Slow: The battery is weak.

Fast: The camera control units' switches and controls are being used.

Warning Indications on the Character Display

The following indications appear on the viewfinder screen.

:LOW LIGHT

Meaning: The lighting is insufficient.

Check: The lighting. Increase it, if necessary.
The iris. Open the iris manually or activate the automatic iris function.
The filter. Select an appropriate filter.
The GAIN selector. Set it to 9 dB or 18 dB.

It is possible to switch the "LOW LIGHT" indication on or off.

On: Press the UP/ON button when the character display is on the "Current camera setting status" (see next page) mode.

Off: Press the DOWN/OFF button when the character display is on the "Current camera setting status" (see next page) mode.

:LOW BATT.

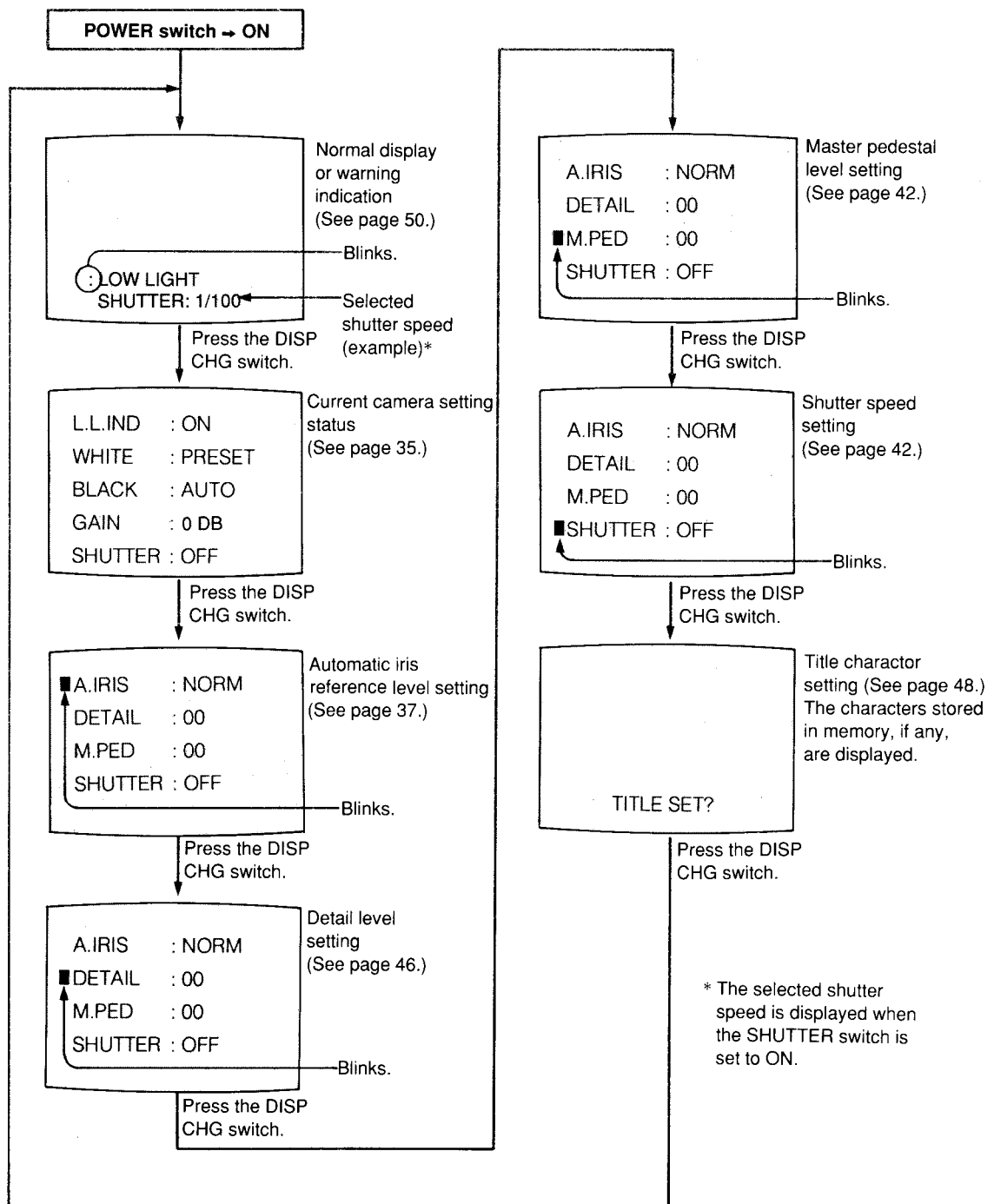
Meaning: The input voltage to the camera is less than about 11 V.

Check: The battery. Replace it with a fully charged one.
If you continue recording with a weak battery, the quality of the recording will deteriorate.

Viewfinder Character Display

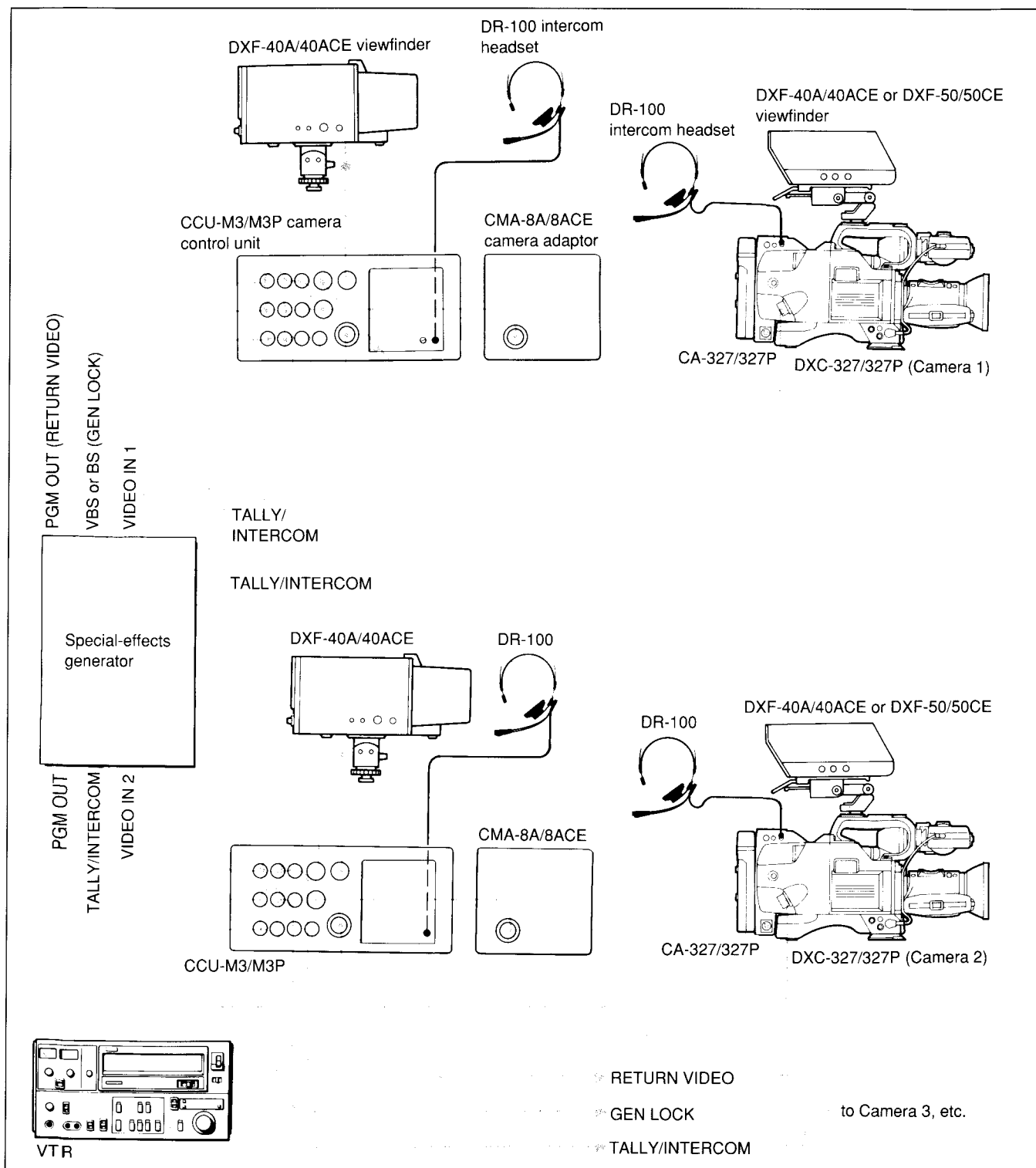
The following chart shows how character display mode changes each time the DISP CHG switch is pressed. In all modes, the black balance and white balance can be adjusted automatically.

The character display mode changes to the black balance or white balance adjustment mode during adjustment, and returns to the selected character display after the adjustment is completed.



How to Use the Camera in a Studio

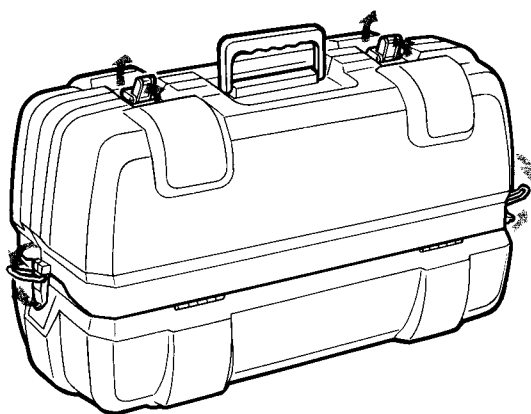
When using more than two cameras simultaneously in a video studio, a special-effects generator, such as the Sony SEG-2000A/2000AP, is necessary for wiping and switching, and a CCU-M3/M3P camera control unit for matching all the camera's picture quality and color.



How to Use the Carrying Case

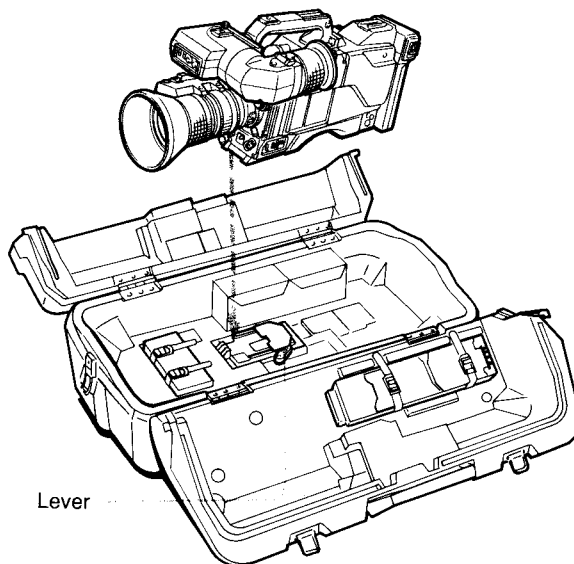
How to Open the Carrying Case

Release the four catches, then open the case from the upper part.



How to Pack the Camera in the Case

- 1** Align the camera to the attachment on the bottom of the case.



- 2** Slide the lever while pressing the red button to fix the camera on the attachment.

Specifications

Camera head (DXC-327/327P)

Image device	Interline-transfer CCD, 3-chip
Picture elements	768 × 494 (h/v) (NTSC) 752 × 582 (h/v) (PAL)
Sensing area	6.4 mm × 4.8 mm (equivalent to a 1/2-inch pickup tube)
Built-in filters	1: 3200 K 2: 5600 K + 1/8 ND 3: 5600 K
Lens mount	Bayonet mount
Signal system	EIA standards, NTSC color system (for DXC-327) CCIR standards, PAL color system (for DXC-327P)
Scanning system	525 lines, 2:1 interlace, 30 frames/sec. (NTSC) 625 lines, 2:1 interlace, 25 frames/sec. (PAL)
Scanning frequency	Horizontal: 15.734 kHz (NTSC) 15.625 kHz (PAL) Vertical: 59.94 Hz (NTSC) 50.00 Hz (PAL)
Sync system	Internal External with the BS or VBS signal supplied to the GEN LOCK IN connector (When the CA-327/327P, CA-325/325P, CA-325A/325AP or CA-325B is used) or the reference signal input to the VTR/CCU/CMA connector from the GEN LOCK IN connector of the CCU-M3/M3P (When the CA-327/327P or CA-325/325 is used)
Horizontal resolution	More than 700 TV lines (center)
Minimum illumination	16 lux with F1.4, + 18 dB
Sensitivity	2000 lux with F5.6, at 3200 K
Gain selection	0 dB, 9 dB or 18 dB, selectable
Video output	Composite signal: 1.0 Vp-p, sync negative, 75 Ω unbalanced Y/C separate signal: Y: 1.0 Vp-p, sync negative, unbalanced C: burst level 0.286 Vp-p (NTSC) 0.3 Vp-p (PAL) without sync
Signal to noise ratio	60 dB (NTSC) 58 dB (PAL)
Registration	0.05 % for Zone I 0.05 % for Zone II 0.05 % for Zone III
Inputs/Outputs	VIDEO OUT: BNC-type LENS: 1/2-inch lens connector (7-pin) 2/3-inch lens connector (6-pin) VF: 8-pin REMOTE: 10-pin

Power requirements

12 V DC

Power consumption

8 W

Operating temperature

−5°C to +45°C (23°F to 113°F)

Storage temperature

−20°C to +60°C (−4°F to 140°F)

Weight

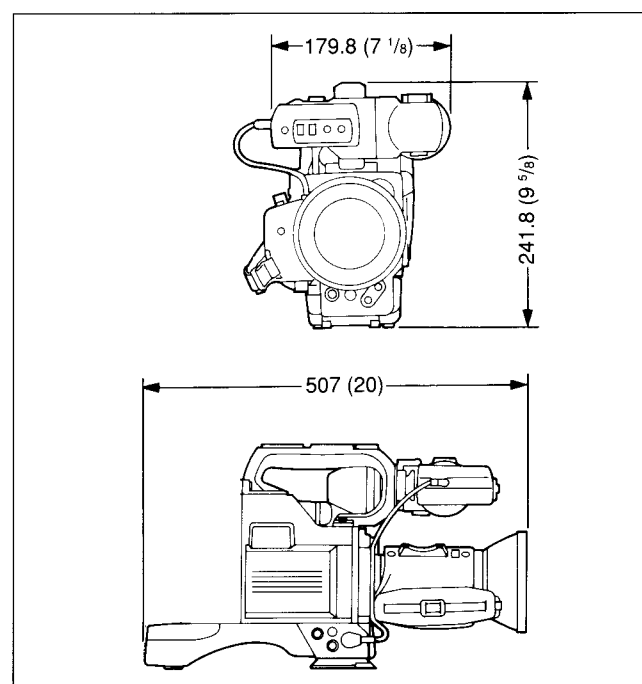
2 kg (4 lb 7 oz)

Dimensions

See the illustrations below.

Unit: mm (inches)

Dimensions



Camera adaptor (CA-327/327P, not supplied)

For details, refer to the CA-327/327P operating instructions.

Inputs/Outputs VTR/CCU/CMA connector: Sony Q-type,
14-pin

DC IN: XLR-type, 4-pin

MIC IN: XLR-type, 3-pin

GEN LOCK IN: BNC-type

EAR: mini jack

INTERCOM: mini intercom

S VIDEO OUT: mini DIN-type, 4-pin

AUDIO OUT: phono jack

Power requirements

12 V DC

Power consumption

0.8 W

Operating temperature

-5°C to +45°C (23°F to 113°F)

Storage temperature

-20°C to +60°C (-4°F to +140°F)

Weight

1.2 kg (2 lb 10 oz)

Zoom lens (VCL-712BX)

Focal length 7.5 mm to 90 mm

Zoom Manual and motorized, selectable

Zooming ratio: 12 ×

Maximum aperture ratio

1 : 1.4

Iris control Manual and auto, selectable

1.4 to 16 and C (closed)

Range of object field (at the distance of 1.1 meter)

W (wide angle): 660 × 880 mm

(24¹/₂ × 34³/₄ inches)

T (telephoto): 55 × 73 mm

(2¹/₄ × 3 inches)

Minimum object distance

1.1 m

Filter thread 72 mm dia., 0.75 mm-pitch

Mount Bayonet mount, 1/2 inch

Weight About 1.2 kg (2 lb 4 oz) with hood

Dimensions About 110 mm dia. × 189 mm

(4³/₈ × 7¹/₂ inches)

Viewfinder (DXF-501/501CE)

Picture tube 1.5-inch monochrome

Indicators REC/TALLY indicator

BATT indicator

SHUTTER indicator

GAIN UP indicator

Resolution 400 lines

Power requirements

12 V DC

Power consumption

2.3 W

Weight About 500 g (1 lb 2 oz)

Dimensions About 182 × 68 × 205 mm (w/h/d)

(7¹/₄ × 2³/₄ × 8¹/₃ inches)

Carrying case (LC-420)

Weight About 7.7 kg (15 lb 7 oz)

Dimensions About 790 × 440 × 340 mm (w/h/d)

(31¹/₈ × 17³/₈ × 13¹/₂ inches)

Accessories supplied

CCQ-2BRS camera cable (with Q-type 14-pin connectors)
(supplied with the DXC-327K/327PK/327L/327PL only)

(1)

VCL-712BX zoom lens (supplied with the DXC-327K/327PK
only) (1)

DXF-327/327CE electronic viewfinder (supplied with the

DXC-327K/327PK/327L/327PL only) (1)

LC-420 carrying case (supplied with the DXC-327K/327PK/
327L/327PL only) (1)

VCT-12 tripod attachment (supplied with the DXC-327K/
327PK/327L/327PL only) (1)

Lens cap (1)

Chart for flange focal length adjustment (1)

Design and specifications are subject to change without
notice.

Optional Accessories and Recommended Equipment

Camera adaptor: CA-327/327P, CA-325/325P, CA-325/325AP, CA-325B

Hi8 format video cassette recorder: EVV-9000/9000P

Battery pack: NP-1B, NP-1A

Battery charger: BC-1WB, BC-1WA

Condenser microphone: ECM-672, C-74

Microphone holder: CAC-12

Microphone cable: EC-0.5C2

Chest pad: CAC-4

Portable video cassette recorder: VO-8800/8800PS, BVU-150/150P

Camera adaptor: CMA-8A/8ACE

Camera remote control unit: RM-M7G

Camera control unit: CCU-M3/M3P

Lens remote control unit: LO-23

Intercom headset: DR-100

Rack mounting metal: RMM-1800

Electronic viewfinder: DXF-50/50CE

Electronic viewfinder: DXF-40A/40ACE

Electronic viewfinder: DXF-501/501CE

Special-effects generator: SEG-2550/2550P

Universal chroma keyer: CRK-2000

Wipe pattern extender: WEX-2000/2000P

Camera cable with Q-type 14-pin connector: CCQ-2BRS, CCQ-5BRS, CCQ-10BRS

Camera cable with Q-type 14-pin connector: CCQ-10AM, CCQ-20AM, CCQ-50AM, CCQ-100AM

Camera cable with Q-type 14-pin and J-type 10-pin connectors: CCQJ-2

$\frac{2}{3}$ -inch lens mount adaptor LO-32BMT

Zoom lens: VCL-712BX

Tripod attachment: VCT-12

Carrying case: LO-420

Camera adaptor: CA-325ED